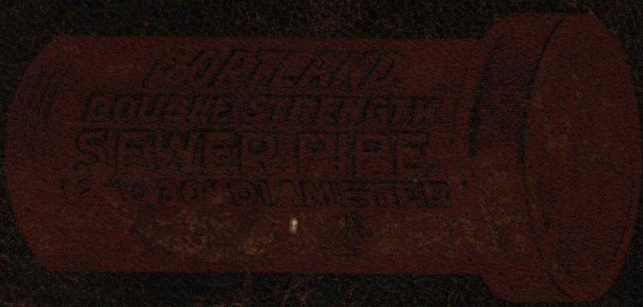
NEW CATALOGUE

PORTLAND STONE WARE CO.



PORTLAND

AND

BOSTON

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ESTABLISHED 1845.

ILLUSTRATED CATALOGUE

OF THE

PORTLAND STONE WARE CO.

WINSLOW & CO., PROPRIETORS.

MANUFACTURERS OF

FIRE BRICK, TILES TERRA COTTA VASES,

Flue Linings, Chimney Tops, Grease Traps, Stone Ware, Etc.

FACTORIES AT
PORTLAND, ME.
WINSLOW & CO.,
PROPRIETORS.
EDWARD B. WINSLOW.

BRANCH HOUSE,
42 Oliver St., Boston.
GEO. C. DUNNE,
MANAGER.

Depot and Yard, 450 Rutherford Avenue,
Charlestown District, Boston.

CONNECTED BY TELEPHONE

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TO BUYERS
OF
SEWER PIPE, FIRE BRICK, ETC.

In presenting you our revised Catalogue, we have endeavored to give a correct illustration of the principal articles manufactured by us. You will find on page five a short description of our Factories. They are located on Forest Avenue, in the city of Portland, Maine.

We have the best railroad and water facilities for making prompt shipments, enabling us to reach most points in New England within a few days.

It is not necessary to enter into a discussion of the merits of **Portland pipe** as compared with other makes. The simple fact that we have been, and are now, furnishing some of the largest contracts in New England, is a sufficient guarantee of the superiority of **Portland pipe.** It bears our brand, "Portland Salt-Glazed Pipe," and while more attractive in appearance than ever before, this Pipe will be found fully up to the high standard of excellence which we have always maintained, viz., its perfect shape, smoothness, hardness and great strength.

The constantly increasing demand for Portland Fire-Brick and Terra-Cotta goods enables us to say that they are unsurpassed by any in the market.

We will always take pleasure in giving any information in our power to those in need of any of our goods.

We extend to you a cordial invitation to visit and examine our goods, either in Portland or Boston.

Hoping by fair dealing to have a continuation of your generous patronage, we remain,

Yours respectfully,

PORTLAND STONE WARE CO.

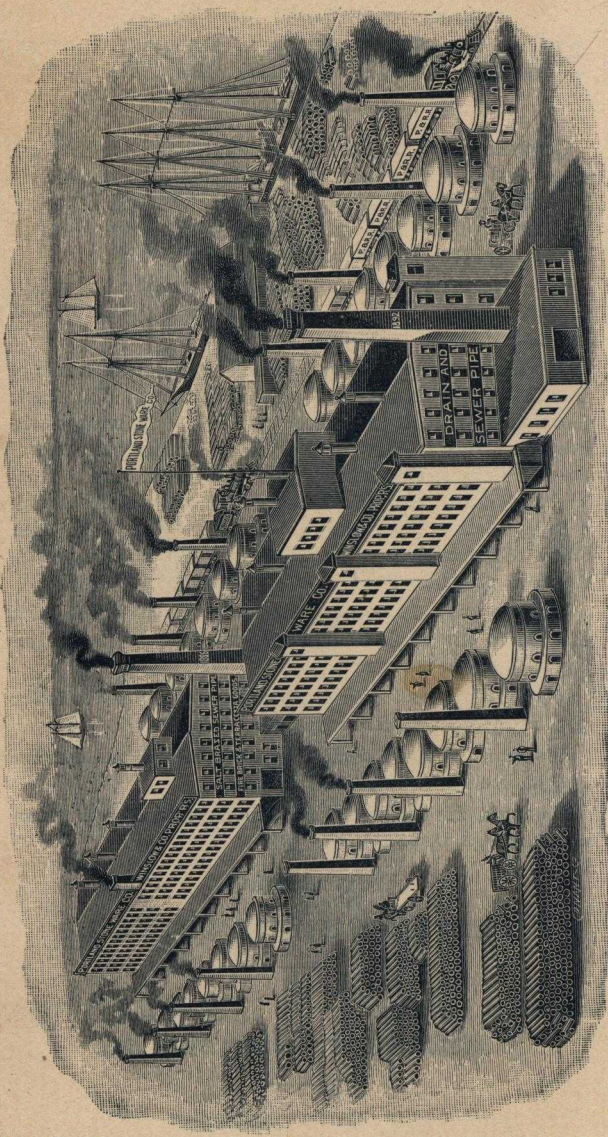
EDWARD B. WINSLOW. **WINSLOW & CO., Props.**

FACTORIES AT PORTLAND, ME.

BRANCH HOUSE, 42 OLIVER STREET, BOSTON,

GEORGE C. DUNNE, MANAGER.

TELEPHONE CONNECTION.



PORTLAND STONE WARE CO'S FACTORIES, FOREST AVENUE, PORTLAND, ME.

PORTLAND STONE WARE CO.

WINSLOW & CO., PROPRIETORS.

Few people have any idea of the extent of the works of the Portland Stone Ware Company, of which Winslow & Company are proprietors.

The works are situated at Portland, Maine, and have a capacity among the largest Sewer Pipe works in this country. This company manufactures the well-known Portland Vitrified Salt Glazed Sewer Pipe, which is admitted by all Engineers to be the best material for sewer construction, which is being so extensively used in all the cities and towns throughout New England. This company has furnished Sewer Pipe in past years to all the leading cities in New England, including Boston, Brockton, Cambridge, Chelsea, Fall River, Haverhill, Lawrence, Newton, Somerville, Springfield, Taunton, Waltham, Arlington, Stoneham, Watertown, in Massachusetts; Providence and Newport in Rhode Island; Concord, Laconia, Rochester, Manchester, Nashua, and Portsmouth, in New Hampshire; and Portland, Augusta, Bangor, Brunswick, Lewiston, and Waterville, in Maine, as well as many other cities and towns. Also Mass. Metropolitan Sewerage Commission, Mass. Metropolitan Water Board, Mass. Highways Commission. These works are run the year round, and give employment to upwards of two hundred men. They also manufacture Deep Socket Double Strength pipe, and Deep and Wide Socket pipe, which is being used quite extensively by all the leading cities to-day. This company also manufactures Fire Brick and Fire Brick Shapes of all patterns, such as Locomotive Arches, Lining for Boilers, and Fire Brick for general use; Vitrified Paving Brick or Blocks for street paving, also Smoke Jacks for round-houses, Garden Vases, and other articles too numerous to mention.

PORTLAND STANDARD PIPE

DIMENSIONS.

Caliber of Pipe.	Approximate Weight per foot.	Thickness of Pipe.	Space for Cement.	Depth of Socket.	Price per foot.
2 in.	6 lbs.	7/16 in.	1/4 in.	1 1/2 in.	$ 16
3 "	7 "	1/2 "	1/4 "	1 1/2 "	16
4 "	10 "	1/2 "	3/8 "	1 5/8 "	20
5 "	12 "	5/8 "	3/8 "	1 3/4 "	25
6 "	16 "	5/8 "	3/8 "	1 7/8 "	30
8 "	22 "	3/4 "	3/8 "	2 "	50
9 "	26 "	13/16 "	3/8 "	2 "	60
10 "	32 "	7/8 "	3/8 "	2 1/8 "	75
12 "	45 "	1 "	1/2 "	2 1/4 "	1 00
15 "	63 "	1 1/8 "	1/2 "	2 1/2 "	1 35
18 "	84 "	1 1/4 "	1/2 "	2 3/4 "	1 70
20 "	100 "	1 3/8 "	1/2 "	3 "	2 25
22 "	120 "	1 5/8 "	1/2 "	3 "	2 75
24 "	136 "	1 5/8 "	1/2 "	3 1/4 "	3 25

PORTLAND DOUBLE STRENGTH.

12 in.	59 lbs.	1 7/16 in.	1/2 in.	2 1/2 in.	$ 1 00
15 "	78 "	1 1/2 "	1/2 "	3 "	1 35
18 "	100 "	1 3/4 "	1/2 "	3 1/4 "	1 70
20 "	125 "	1 3/4 "	1/2 "	3 1/4 "	2 25
22 "	150 "	2 "	1/2 "	4 "	2 75
24 "	180 "	2 1/8 "	1/2 "	4 "	3 25
27 "	225 "	2 1/4 "	3/4 "	4 "	4 50
30 "	256 "	2 1/2 "	1 1/4 "	5 "	5 50
36 "	350 "	3 "	1 1/4 "	5 "	7 00

PORTLAND DEEP AND WIDE SOCKET.

3 in.	7 lbs.	1/2 in.	1/2 in.	1 1/2 in.	$ 16
4 "	10 "	1/2 "	1/2 "	2 "	20
5 "	12 "	5/8 "	5/8 "	2 1/2 "	25
6 "	16 "	5/8 "	5/8 "	2 1/2 "	30
8 "	22 "	3/4 "	5/8 "	2 3/4 "	50
10 "	32 "	7/8 "	5/8 "	2 3/4 "	75
12 "	45 "	1 "	5/8 "	3 "	1 00
15 "	63 "	1 1/8 "	5/8 "	3 "	1 35
18 "	84 "	1 1/4 "	5/8 "	3 1/4 "	1 70
20 "	100 "	1 3/8 "	5/8 "	3 1/2 "	2 25
24 "	136 "	1 5/8 "	5/8 "	4 "	3 25

PORTLAND DEEP AND WIDE SOCKET DOUBLE STRENGTH.

12 in.	59 lbs.	1 7/16 in.	5/8 in.	3 in.	$1 00
15 "	78 "	1 1/2 "	5/8 "	3 "	1 35
18 "	100 "	1 3/4 "	5/8 "	3 1/4 "	1 70
20 "	125 "	1 3/4 "	5/8 "	3 1/2 "	2 25
22 "	150 "	2 "	5/8 "	4 "	2 75
24 "	180 "	2 1/8 "	5/8 "	4 "	3 25

Advantages of Pipe Sewers Over Brick Sewers.

While an efficient system of sewerage is a necessity, it is also expensive, and this is what tempts corporations to use economy (so called), and build such sewers which apparently cost the least money. Hence brick or stone sewers are often built instead of pipe sewers. Now, while brick sewers can in some instances be built with less outlay than pipe sewers, yet true economy would suggest the use of pipe sewers in all cases, for various reasons.

1. The cost of material in building sewers and drains is small compared with the expense of the excavating, back filling and repairing the surface of the streets in which the sewers are built.

2. Good Salt-Glazed Vitrified Pipe are as durable and as imperishable as glass. This cannot be said of any other kind of sewers.

3. Experience shows that brick and stone sewers do not effectually remove filth, that owing to the crevices caused by the joints of material used in the construction of brick or stone sewers, filth accumulates, little by little, on the bottom and sides, until often they become filled with accumulations and cannot perform the work for which they are built, until they are cleaned at great cost.

It has been practically demonstrated that all these difficulties may be overcome by the use of SALT-GLAZED VITRIFIED PIPE. They have a smooth, even surface, and if the size is proportionate to the amount of work they have to perform they are self-cleaning and are impervious to the action of acids and gases. Col. George E. Waring, Jr., who has had much experience in sewerage, the author of *The Sanitary Drainage of Houses and Towns*, a valuable work, from which, by permission, we quote, and which we commend to the authorities wherever sewerage is contemplated, says:

"The more important considerations affecting the question of town sewerage are well stated in the 'general conclusions' of the English Board of Health, after a thorough investigation of the whole subject of sewerage, as follows:

* * * * * *

"That the general use of large brick sewers has resulted from ignorance or neglect; such sewers being wasteful in construction and repair, and costly through inefficient efforts to keep them free from deposits.

"That brick and stone house drains are false in principle, and wasteful in cleansing, construction and repair.

"That house drains and sewers properly constructed of vitrified pipe, detain and accumulate no deposits, emit no offensive smells, and require no additional supplies of water to keep them clear.

"The pipe sewer has been so long in successful use, that there is no further question of its value." * * *

Vitrified Pipe is largely preferable to *cement pipe*. Many towns have used cement pipe to their sorrow, and the list is rapidly lengthening of cities and towns compelled to dig up and throw cement pipe out. In many cases it has so completely decayed as to cause the streets to cave in. Cement pipes have been often condemned, and are going out of use. The most casual observer can try the experiment in a moment by taking a piece of cement pipe and pouring acid on it. It will effervesce at once and show abrasion of surface, while the same acid poured on vitrified pipe shows no action whatever.

We have in our office a piece of Portland Pipe which has been tested in sulphuric acid for over five years, and is not in the least affected.

Portland Standard, and Deep and Wide Socket Salt-Glazed Drain and Sewer Pipe.

Price List Adopted by the Eastern and Western Manufacturers, Dec. 19, 1901.

Inside Diameter.	Price per foot.	Elbows, Bends and 2 ft. Curves each.	Y or T Branches, each.							P. S. and Single H. H. Traps each.	Reducers and Increasers each.	Slants per 1 ft. or less long side	Split or Channel Pipe per ft.	Stoppers or Plugs each.	Approximate Weight of Pipe per foot.
			1 or 2 ft. l'g with Inlets up to & including 12 in.	2½ or 3 ft. long with Inlets up to and including 12 in.	2 feet long with Inlets 15 in. or larger.	2½ or 3 ft. long with Inlets 15 in. or larger.	Double 2 ft. long with Inlets up to and including 12 in.	Double 2½ or 3ft. long with Inlets up to and including 12 in.	Double 2 ft. long with Inlets 15 in. or larger.	Double 2½ or 3ft. long with Inlets 15 in. or larger.						
2 in.	$ 16	$ 50	$ 72	.....	.....	.....	.....	.....	.....	.....	$1 50	.....	.....	.....	.....	6
3 "	16	50	72	.....	.....	.....	.....	.....	.....	.....	1 50	$ 64	$ 48	.....	$ 5⅓	7
4 "	20	65	90	.....	.....	.....	$ 1 40	.....	.....	.....	2 00	.. 80	60	$ 12	.. 6⅔	10
5 "	25	85	1 13	.....	.....	.....	.. 1 76	.....	.....	.....	2 50	.. 1 00	75	15	.. 8⅓	12
6 "	30	1 10	1 35	.....	.....	.....	.. 2 10	.....	.....	.....	3 50	.. 1 20	90	18	.. 10	16
8 "	50	2 00	2 25	$ 3 25	.....	.....	.. 3 50	$ 4 50	.....	.....	6 60	.. 2 00	1 50	30	.. 16⅔	22
9 "	60	2 40	2 70	.. 3 90	.....	.....	.. 4 20	.. 5 40	.....	.....	7 50	.. 2 40	1 80	36	.. 20	26
10 "	75	3 00	3 40	.. 4 90	.....	.....	.. 5 30	.. 6 80	.....	.....	9 00	.. 3 00	2 25	45	.. 25	32
12 "	1 00	4 00	4 50	.. 6 50	.....	.....	.. 7 00	.. 9 00	.....	.....	15 00	.. 4 00	3 00	60	.. 33⅓	45
15 "	1 35	5 40	6 10	.. 8 80	$ 9 15	$11 85	.. 9 50	.. 12 20	$15 60	$18 30	22 00	.. 5 40	4 05	81	.. 45	63
18 "	1 70	6 80	7 65	.. 11 05	11 48	.. 14 88	.. 11 90	.. 15 30	.. 19 56	.. 22 96	.....	.. 6 80	5 10	1 02	.....	84
20 "	2 25	9 00	10 13	.. 14 63	15 20	.. 19 70	.. 15 76	.. 20 26	.. 25 90	.. 30 40	.....	.. 9 00	6 75	1 35	.....	100
21 "	2 50	10 00	11 25	.. 16 25	16 88	.. 21 88	.. 17 50	.. 22 50	.. 28 76	.. 33 76	.....	.. 10 00	7 50	1 50	.....	105
22 "	2 75	11 00	12 38	.. 17 88	18 57	.. 24 07	.. 19 26	.. 24 76	.. 31 64	.. 37 14	.....	.. 11 00	8 25	1 65	.....	116
24 "	3 25	13 00	14 63	.. 21 13	21 95	.. 28 45	.. 22 76	.. 29 26	.. 37 40	.. 43 90	.....	.. 13 00	9 75	1 95	.....	130
27 "	4 25	20 00	.....	.. 21 25	.....	.. 31 88	.....	.. 31 88	.....	.. 53 14	.....	.. 17 00	12 75	2 55	.....	180
30 "	5 50	27 50	.....	.. 27 50	.....	.. 41 25	.....	.. 41 25	.....	.. 68 75	.....	.. 22 00	16 50	3 30	.....	256
36 "	7 00	32 50	.....	.. 35 00	.....	.. 52 50	.....	.. 52 50	.....	.. 87 50	.....	.. 28 00	21 00	4 20	.....	350

Increasers shall have socket on small end, and **Reducers** socket on larger end, and shall be charged the price of 4 ft. of pipe, size of larger end

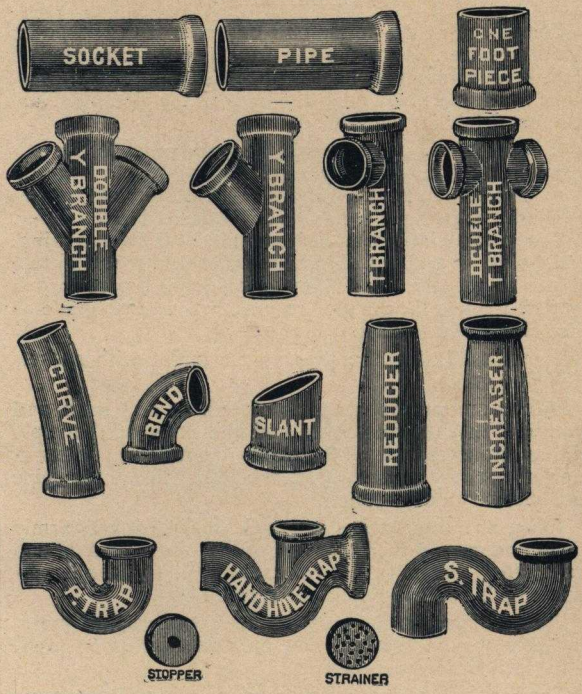
Every Shipment at the RISK OF THE PURCHASER, and no Allowance for Breakage.

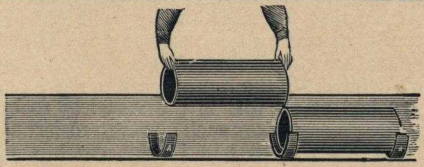
Liberal Discount from this List. ***Discounts governing price of 2 to 24 in. will not apply on sizes 27 to 36 in.***

See pages 15 and 16 Deep and Wide Socket Double Strength Pipe.

PORTLAND DRAIN AND SEWER PIPE SHAPES.

Sizes 2 in. to 24 in.





The above cut shows the Laying of Ring Pipe.

Ring Pipe Laid.

Ring.

SOCKET PIPE, from 2 in. to 24 in. inside diameter.
RING PIPE, from 12 in. to 24 in. inside diameter.

These Stone-Ware

SLOP HOPPERS

Are used largely for Water Closets.

Outlets to fit 3, 4, 5, 6 and 8 in. Pipe.

Price, $3.50.

Directions for Laying Sewer Pipe.

Commence at the lower end or outlet of the proposed drain or sewer, and make the trench of uniform gradual inclination throughout its length. Cut out little depressions for the sockets so that the body of the pipe when laid will rest firmly on the ground.

It is of great importance that the grade of the fall be uniform. This is most easily accomplished by stretching a line eight, ten, or twelve feet above the bottom of the proposed ditch, giving it the grade or fall desired in the sewer, and supporting it by cross-bars, to prevent it from sagging. A light rod, reaching from the line overhead to the bottom of the ditch, will enable any inexperienced workman to prepare the bed for the pipe on exactly the same grade as the guide-line overhead.

Commence laying the pipe at the outlet, with sockets facing up grade.

Make a mortar of equal parts of cement and sand, and work well into the sockets around the ends of the pipe, taking care to remove all fragments or projecting points of mortar that may work through the joints inside the pipe and become an obstruction.

When the cement has set, pack fine earth very firmly under and around the lower half of the pipes, then fill up trench (fine dirt first), and you cannot fail to have a permanent job that will require no repairs.

Pipes will sustain the greatest amount of vertical pressure when they have a firm and uniform bearing at every point in their lower surface.

The easy and too common way of laying the extreme bottom of the pipes on solid bearing, while the sides are inadequately supported by the loose earth carelessly filled in about them, causes almost the entire pressure to fall on a very narrow segment of the bottom wall of the pipe, and if it can be crushed at all, this is the very way to crush it. But stone-ware pipes possess such power to resist any crushing force that, even when laid in this careless way, the smaller sizes will stand any ordinary amount of pressure; but the safest way to lay the larger sizes, say all over nine inches in diameter, is to dig a very narrow trench in the middle of the ditch, when brought to grade, about six inches wide, and three or four inches deep.

The pipes being laid in this little trench will be sure of a firm bearing along each side, and if the loose earth is well packed and rammed about the pipes from this bearing up to the centre line of the pipes, they will stand an extraordinary amount of pressure without injury. Care should be taken in all cases to excavate a suitable depression for the sockets, so that they may not have to sustain more than their due proportion of pressure.

In answer to numerous inquiries as to how deep in the earth our Stone-Ware Pipes may be safely laid, we answer the deeper the better.

DIRECTIONS FOR LAYING SEWER PIPE.—Con.

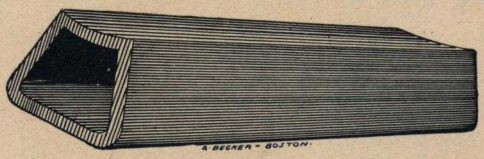
There is not, to our knowledge, a single instance on record where a Portland Salt-Glazed Pipe has ever been crushed by the superincumbent earth. The fact is, that in deep cuts the filling over the pipes is partially supported by the sides of the cut, and forms a kind of arched bridge over the pipes, so that if they could be properly removed without disturbing the earth above, when once well settled, the earth would still retain its position for awhile, which would seem to indicate that the deeper pipes are buried in the ground the safer they are, and the less they are affected by any additional weight at the surface.

TO LAY RING PIPE.

Prepare the trench as above with depressions for the rings; break the rings in two or more pieces. Spread a layer of cement about one-half inch thick over the concave surface of one of these pieces, and lay the ends of the two pipes thereon, butting them firmly together. Cover the upper surface of the pipes at the joints with a layer of cement of sufficient thickness to allow the remaining pieces of the ring to imbed themselves; cover all around the edges of the ring with the cement, and press it firmly in the corners and cracks, and smooth it off, swabbing the cement from the inside of the pipe.

INVERT BLOCKS.

USED FOR SEWERS. ROUND AND OVAL.



INVERT BLOCK. SEWER BOTTOM.

They act as a shoe for the sewer, and the balance of the sewer is built of brick to suit any size.

We make two sizes, 4 inch and 8 inch, in 2 feet lengths from drawings used by Providence, R. I.

CHANNEL PIPES.

FOR OPEN DRAINS OR THE BOTTOM OF MAN-HOLES.

Price: Three-fifths the price of whole pipe. With or without socket.

PORTLAND DEEP AND WIDE SOCKET PIPE.

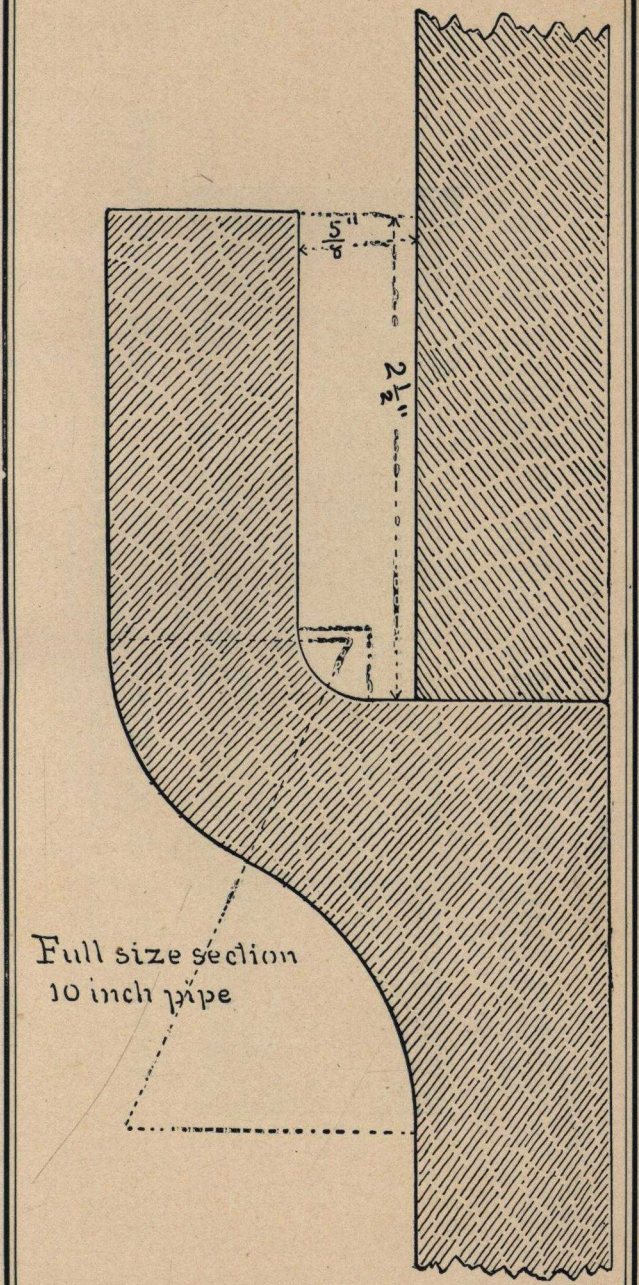
In the summer of 1891, Mr. M. M. Tidd, Civil Engineer, Boston, suggested an improvement in the Sockets or Bell of Vitrified Sewer Pipe.

At our request he submitted the dimensions below and the design on the opposite page, from which we had machinery made to manufacture Sewer Pipes in accordance with his drawings.

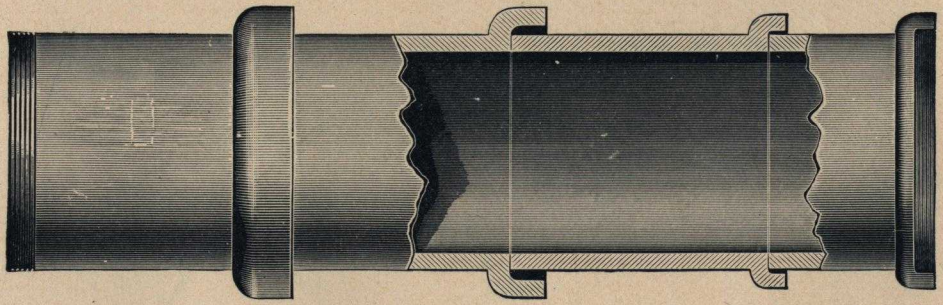
SIZE OF PIPE.	THICKNESS OF CEMENT.	DEPTH OF BELL.
6 inches.	$\frac{5}{8}$ inch.	$2\frac{1}{2}$ inches.
8 "	" "	$2\frac{1}{2}$ "
10 "	" "	$2\frac{1}{2}$ "
12 "	" "	3 "
15 "	" "	3 "
18 "	" "	3 "
20 "	" "	$3\frac{1}{2}$ "
24 "	" "	4 "

This Deep Socket Pipe has been used by the following cities and towns, and a large number are contemplating using it the coming year:—

Brockton, Mass.	F. Herbert Snow, City Engineer, Brockton.
Medford, "	T. Howard Barnes, City Engineer, Medford.
Malden, "	Geo. A. Wetherbee, City Engineer, Malden.
Marlboro', "	B. R. Felton, Chief Engineer, Boston.
Stoneham, "	B. R. Felton, Chief Engineer, Boston.
Woburn, "	M. M. Tidd, Chief Engineer, Boston.
Brunswick, Me.	E. W. Bowditch, Chief Engineer, Boston.
Gardner, Mass.	McClintock & Woodfall, Chief Engineers, Boston.
Andover, "	McClintock & Woodfall, Chief Engineers, Boston.
Ipswich, "	Freeman C. Coffin, Chief Engineer, Boston.
Charlottetown, P. E. I.	Freeman C. Coffin, Chief Engineer, Boston.
Watertown, Mass.	W. T. Pierce, Chief Engineer, Boston.
Belmont, "	E. A. W. Hammatt, Chief Engineer, Boston.
Arlington, "	Geo. A. Kimball, Chief Engineer, Boston.
Taunton, "	Geo. A. King, City Engineer, Taunton.
Lowell, "	George Bowers, City Engineer, Lowell, Mass.


5/8"
2 1/2"
Full size section
10 inch pipe

PORTLAND DEEP AND WIDE SOCKET PIPE.



IMPROVED SOCKETS. OLD SOCKETS.

Depth of Sockets, 2½ to 4 inches. Space for cement, ⅝ inch.

PORTLAND DEEP AND WIDE SOCKET PIPE.

There has always been a large field open for the improvement of sewer pipe, and it is a fact that one of the most serious things that civil engineers have had to contend with has been the underground leakage into the pipes, which many times has been a great disadvantage to them in estimating the capacity of the system needed. In a great many cases, this leakage has amounted to many hundred thousand gallons per day, and in some cases, to nearly one-quarter of the capacity of the system. The trouble is that there has not been room enough in the sockets for the gasket and cement needed, and in some pipes there is little room for either. Through the urgent and repeated requests of some of the most eminent New England engineers we have had special machinery made for a pipe that will meet the long felt want. We shall brand it "**Portland Deep Socket Pipe.**" It will be made where practical in three-foot lengths, and in sizes from 3 in. to 24 in. diameter. A comparison of the cut on the opposite page will demonstrate to you the great advantages between regular Standard and our Improved Deep Socket Pipe.

It is specially recommended to **Civil Engineers** for sewerage systems or water works for the following reasons:

First: The **socket** being so much **deeper** and **wider** than Standard Pipe, a much stronger joint can be made and equal in strength to the pipe itself, whereas in the Standard Pipe the cement space is so narrow as to render it impossible to introduce cement and gasket enough to insure a tight joint.

Second: The **socket** being made straight and both ends grooved, there is no possibility of forcing the cement from joints by flushing.

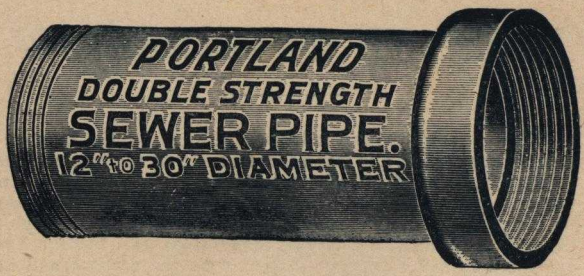
Third: The **socket** being so **deep** and **wide**, an **absolutely water tight joint** can be made with **gasket** and **cement.**

Fourth: The **socket** being **deep** (2½ in. to 4 in.), and the clear space between spigot and socket (⅝ in.), ought to recommend it to every Civil Engineer, Superintendents of Streets and Contractors.

PORTLAND DEEP AND WIDE SOCKET.

Size.	Approximate Weight per foot.	Thickness	Space for Cement.	Depth of Bell on Deep Sock.	Price per foot.
3 in.	7 lbs.	½ in.	½ in.	1½ in.	$ 16
4 "	10 "	½ "	½ "	2 "	20
5 "	12 "	⅝ "	⅝ "	2½ "	25
6 "	16 "	⅝ "	⅝ "	2½ "	30
8 "	22 "	¾ "	⅝ "	2¾ "	50
10 "	32 "	⅞ "	⅝ "	2¾ "	75
12 "	45 "	1 "	⅝ "	3 "	1 00
15 "	63 "	1⅛ "	⅝ "	3 "	1 35
18 "	84 "	1¼ "	⅝ "	3¼ "	1 70
20 "	100 "	1⅜ "	⅝ "	3½ "	2 25
24 "	136 "	1⅝ "	⅝ "	4 "	3 25

Space reserved all around this Pipe for Cement and Gasket, 5-8 inch.



FROM TEST MADE AT THE WATERTOWN ARSENAL, MAY, 1896.

Portland Pipe tested between hardwood cushions fitted to diameter of Pipe, and covering approximately one-third the exterior diameter.

12-inch Pipe,	9,090 lbs.	20-inch Pipe,	7,880 lbs.
15 " "	7,980 "	24 " "	7,310 "
18 " "	10,010 "	30 " "	8,890 "

This DOUBLE STRENGTH PIPE is made by a new steam press, with IMPROVED SOCKETS and INCREASED THICKNESS, placing it far ahead of any Pipe manufactured in this country.

PORTLAND DEEP AND WIDE SOCKET DOUBLE STRENGTH.

Caliber of Pipe.	Approximate Weight per foot.	Thickness of Pipe.	Space for Cement.	Depth of Socket.	Price per foot.
12 in.	59 lbs.	1 7/16 in.	5/8 in.	3 in.	$ 1 00
15 "	78 "	1 1/2 "	5/8 "	3 "	1 35
18 "	100 "	1 3/4 "	5/8 "	3 1/4 "	1 70
20 "	125 "	1 3/4 "	5/8 "	3 1/2 "	2 25
22 "	150 "	2 "	5/8 "	4 "	2 75
24 "	180 "	2 1/8 "	5/8 "	4 "	3 25
27 "	225 "	2 1/4 "	3/4 "	4 "	4 50
30 "	256 "	2 1/2 "	3/4 "	5 "	5 50
36 "	350 "	3 "	3/4 "	5 "	7 00

FOR FULL PRICE LIST SEE PAGE 8.

PORTLAND DOUBLE-STRENGTH VITRIFIED CULVERT PIPE.

This Pipe is especially desirable for **Railroads, Culverts, Roadways and Street Crossings.** It is *thicker*, *stronger* and more durable than common drain pipe.

The Construction of a Pipe Culvert

is a very simple matter, but should, nevertheless, be done with care. We offer a few short suggestions, as follows:

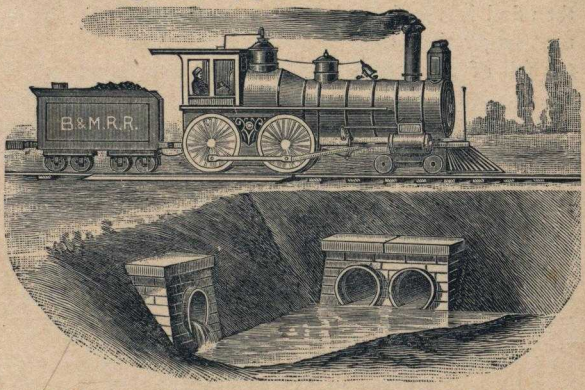
1. After digging trench, bring it to proper grade.

2. If the ground is firm, round out the bottom of trench so the pipe may rest solid upon the ground.

3. See that the socket of the pipe rests firmly within a depression cut especially for it, thus allowing the entire under surface of the pipe to come in contact with bottom of trench.

4. Commence at outlet or lower side of road and lay the pipes in position, with sockets facing up grade, taking care to see that each pipe fits into the socket of the one below it, and that all rest perfectly on the ground.

5. Pack and ram the filling firmly around the pipe, and up to the centre line, as shown in illustration above. This is of the greatest importance, and increases the durability of the culvert many fold by making available the full strength of the pipes.



6. See that the lower end of your culvert is above the bottom of your drain, as, if the water be allowed to stand in the culvert in cold weather, it would surely freeze.

7. The ends of culvert should be protected by either stone or wood abutments to prevent the pipes being displaced by the action of the water, or by animals in search of worms or roots.

In laying the foundation of abutment, where one is used, the same of course should extend far enough down

into the the ground to be below the influence of frost, as otherwise the alternate heaving and settling might throw the end pipe out of position.

The size of pipe required in each particular case, depends, of course, on the amount of water to be provided for, and this in turn depends upon the area of ground from which the rainfall runs to the culvert. The area can generally be estimated with sufficient accuracy by careful observations.

Statistics show that in this section of the country the amount of rainfall during the heaviest storms, rarely amounts to one inch in depth of solid water, over any surface in one hour.

One acre of water one inch deep measures 22,633 gallons, which is the amount of water which may fall on one acre in one hour, and one sixtieth part of this, or 377 gallons, is the quantity which may fall on the same area in a minute, but owing to various obstructions not more than three-fourths of this water would reach the culvert the same hour. Therefore any culvert of sufficient size and fall to pass three-fourths of 377 gallons in a minute, or say 300 gallons in a minute, is large enough to drain one acre in the heaviest floods.

Therefore, to find the size of pipe required for any number of acres, multiply the number of acres by 300, and then find in the following table the number equal to or next larger than this product in the column indicating the fall of the proposed culvert, and the figures at the extreme left in the same horizontal line will indicate the proper size of pipe. If one pipe is not sufficient, lay two or more pipes abreast, as is often done to obtain the required capacity.

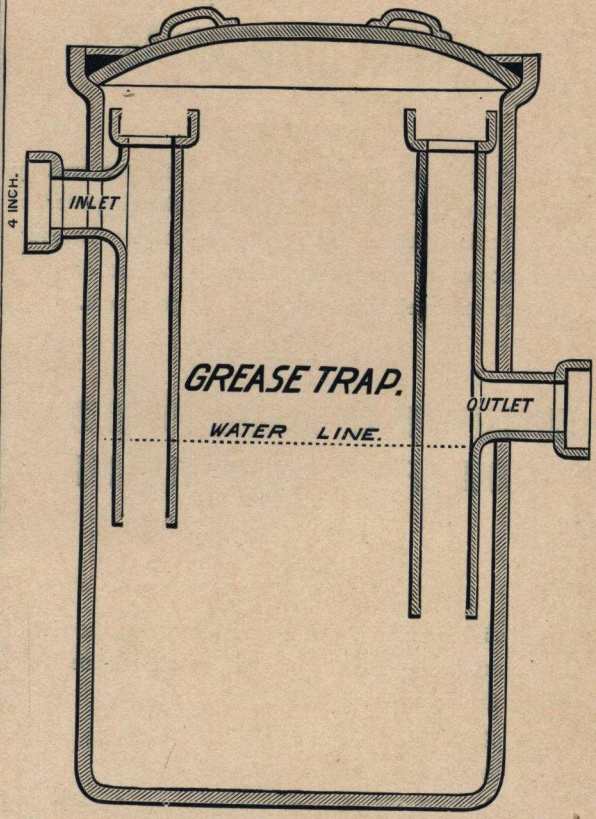
TABLE.

Showing the Carrying Capacity of Pipe for Different Grades, in Gallons per Minute.

Size of Pipe.	1-in. fall pr. 100 ft.	2-in. fall pr. 100 ft.	3-in. fall pr. 100 ft.	6-in. fall pr. 100 ft.	9-in. fall pr. 100 ft.	1-ft. fall pr. 100 ft.	2-ft. fall pr. 100 ft.	3-ft. fall pr. 100 ft.
3 in.	13	19	23	35	40	46	64	79
4 "	27	38	47	66	81	93	101	163
6 "	75	105	129	183	224	258	364	450
8 "	153	216	265	375	460	529	750	923
9 "	205	290	355	503	617	711	1006	1240
10 "	267	378	463	655	803	926	1310	1613
12 "	422	596	730	1033	1273	1468	2076	2554
15 "	740	1021	1282	1818	2224	2464	3617	4467
18 "	1168	1651	2022	2860	3508	4045	5704	7017
24 "	2396	3387	4152	5871	7202	8303	11744	14466
30 "	4187	5920	7252	10257	12580	14504	20516	25277

Portland Stone-Ware Grease Traps.

INDESTRUCTIBLE AND FREE FROM RUST.
ECONOMICAL, CHEAP AND DURABLE.



The most common cause of obstruction to house drains arises from grease, which, though fluid when hot, soon cools in the drains, and gradually closes them up. By using the above trap, all grease and floating matter will on entering rise to the surface of the water, from which it can conveniently be removed by taking off the cover, which should be sealed either with plaster paris or putty. They are indispensable to Hotels, Restaurants, Public Buildings, large boarding houses, and private dwellings, and the amount of grease if sold will more than pay cost of trap in a short time. They are the only Salt-Glazed Vitrified Stone-Ware Grease Trap made with the inlet and outlet so as to prevent gases from returning into the house.

PRICE-LIST.

24	inches	diameter,	36	inches	high	. $20 00
18	"	"	36	"	"	. 12 00
15	"	"	24	"	"	. 7 00

SEWER DIAGRAMS.

The diagrams on the following pages were prepared by Mr. Freeman C. Coffin, Civil and Hydraulic Engineer, of Boston, and are published with his permission. They furnish a convenient method for the rapid solution of many problems connected with the design of pipe sewers.

EXPLANATIONS OF DIAGRAM FOR FINDING COST OF PIPE SEWERS IN EARTH EXCAVATIONS.

At the intersection of the lines representing the size of sewer, and the depth to the bottom from the surface of the ground, find cost per lineal foot.

Example:—What is the cost of a 12 inch pipe sewer, laid 13 feet below the surface? Answer—$1.50.

The diagram is based on the average cost of such work in the kind of material usually found in Massachusetts cities and towns, and does not cover cost of rock excavation, or unusually difficult work, such as quicksand.

It gives the cost of the Sewers laid including cost of pipe.

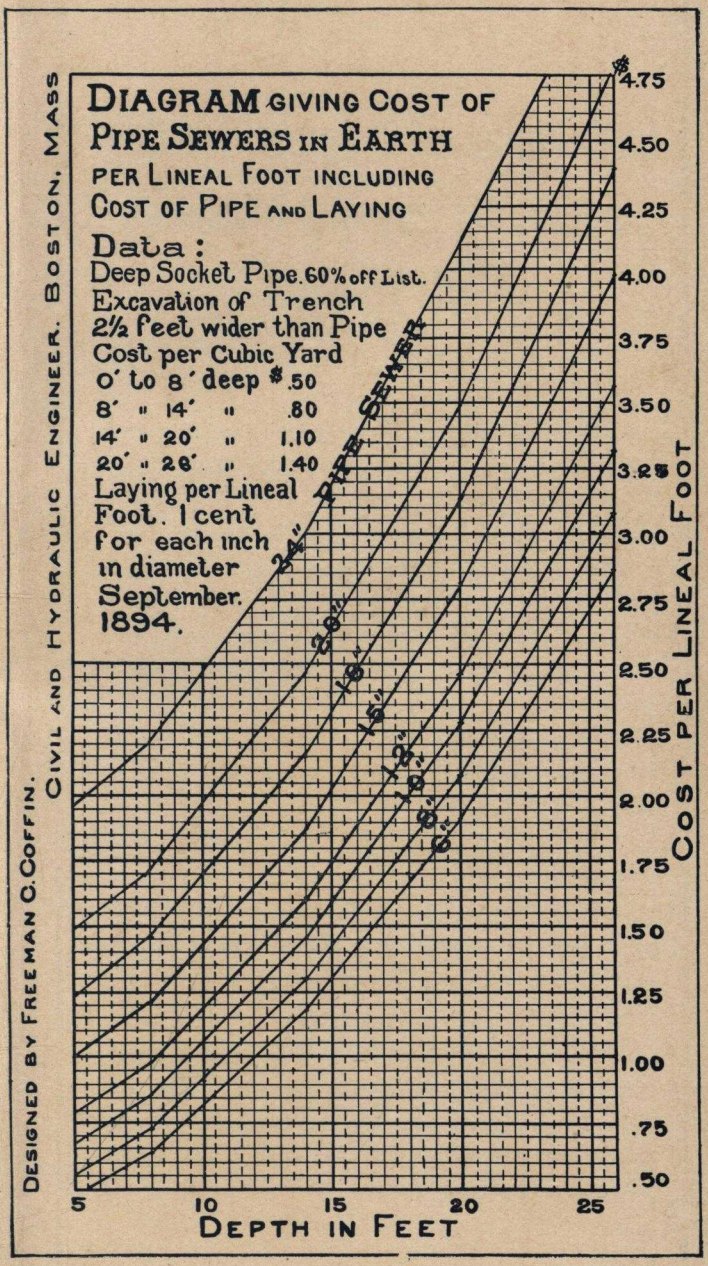


DIAGRAM GIVING COST OF PIPE SEWERS IN EARTH
PER LINEAL FOOT INCLUDING COST OF PIPE AND LAYING
Data:
Deep Socket Pipe. 60% off List.
Excavation of Trench
2½ feet wider than Pipe
Cost per Cubic Yard
0' to 8' deep $.50
8' " 14' " .80
14' " 20' " 1.10
20' " 28' " 1.40
Laying per Lineal Foot. 1 cent for each inch in diameter
September. 1894.
PIPE SEWER
24"
20"
18"
15"
12"
10"
8"
6"
$4.75
4.50
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
.75
.50
COST PER LINEAL FOOT
5
10
15
20
25
DEPTH IN FEET
DESIGNED BY FREEMAN C. COFFIN.
CIVIL AND HYDRAULIC ENGINEER. BOSTON, MASS

Explanation of Diagram for Computing Velocity and Discharge of Sewers.

1. Size and fall given, to find velocity and discharge.

Example: — Given, 12 inch sewer with fall of .4 in 100. What is the velocity?

Find the intersection of the curve representing the 12 inch diameter and the line representing the fall, and at that point find the value of the velocity curve. This point is between the curves representing a velocity of 3 and 4 feet per second, and is approximately 3.15 feet per second. To find discharge when running full, find the value of the lines representing discharge at the above point, viz., 1110 gallons per minute, or $2\frac{1}{2}$ cubic feet per second. One half that amount if running half full.

2. Size of pipe and required discharge given, to find necessary fall.

At intersection of lines of discharge and size of pipe, find value of lines representing fall. Given, 10 inch pipe, and required discharge of 800 gallons per minute. What fall is necessary? Answer—.51 per 100.

3. Fall and required discharge, to find size of pipe.

At intersection of lines of discharge and fall find size of pipe. With a fall of .2 per 100 and required discharge of 2000 gallons per minute, or 4.48 cubic feet per second, what size is required? Answer—18 inch.

RED DRAIN TILE.

For Under-Draining Wet Land, Orchards, Etc.

PRICE PER 1,000 PIECES.

2 inch,	$20.00	per	1000	feet,	Weight,	3,000	lbs.	Branch	.10
3 "	32.50	"	"	"		5,000	"	"	.20
4 "	45.00	"	"	"		7,000	"	"	.25
5 "	70.00	"	"	"		11,000	"	"	.35
6 "	90.00	"	"	"		13,000	"	"	.45

We have adopted the round tile, believing it to be the only correct form tile should take; and in this we are sustained by the precepts and practice of scientific engineers, both in this country and England, who have made the business of drainage a study. French in his work on "Farm Drainage," says: "The simplest, cheapest, and best form of drain tile is the cylinder, or merely a tube with a round bore."

Col. George E. Waring, Jr., in his excellent work on drainage, says:

"If a rule for drainage could be adopted which would cover all the varied circumstances of different soils, it would be somewhat as follows: All lands of whatever texture or kind in which the spaces between the particles of soil are filled with water (whether from springs or rain) within less than four feet of the surface of the ground, except during and immediately after heavy rains, require draining. Of course the particles of the soil cannot be made dry, nor should they be, but although they should be moist themselves, they should be surrounded with air, not with water."

In laying Sole Tile care should be taken to have the bottom and one of the perpendicular sides of the trench as regular as possible, in order that the tile may be put into a position against them, from which it will not vary when being covered. The trench having been built with a gradual slant in the direction in which the water is to be conveyed, place the tile end to end, and after putting over the joints, grass, hay or tarred paper, cover with loose gravel.

Fire Brick, Tiles and Shapes.

Portland Fire Brick is so well known that very little need be said, except to state that we have the largest factory in New England, situated on a water front, with a railroad track in the yard, thus enabling us to manufacture several grades of brick from the very best fire clay, and wherever used have given entire satisfaction. We believe them equal to any in the market, and at prices as low as any. Special Shapes and Tiles furnished to order at short notice for

ROLLING MILLS, **COPPER-WORKS,**

GLASS-WORKS, **LIME-KILNS,**

STEEL-WORKS, **GAS-WORKS.**

Paper-Mill and Locomotive Tiles.

McKENZIE CUPOLA LINING,

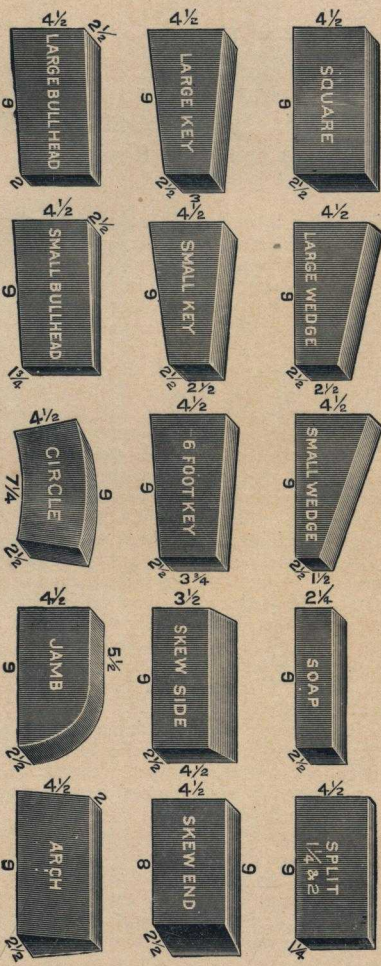
BAKER'S OVEN TILES,

GREENHOUSE TILES.

Kaolin, Fire Clay, Fire-Sand, Moulding-Sand, by the Cargo, Ton or Barrel. Pulverized Fire-Clay, Ground Fire-Brick, "Portland" Mixture for Stove-Linings. Portland, Roman and American Cement, Lime, etc.

SPECIAL PRICES IN CARLOAD LOTS.

PORTLAND FIRE BRICK SHAPES KEPT IN STOCK.



PORTLAND FIRE BRICK ARE FULL SIZE, 9 x 4½ x 2½.

SPECIAL PRICES IN CARLOAD LOTS.

84 Large Bullhead turn circle 58 in. inside dia.
84 Small Bullhead turn circle 48 in. inside dia.
15 Circle Brick turn circle 36 in. inside dia.
39 Arch Brick turn circle 26 in. inside dia.
36 Large Key turn circle 36 in. inside dia.
32 Small Key turn circle 28 in. inside dia.
56 6 ft. Key turn circle 6 ft. inside dia.

Large Circles can be turned by using a proportion of Square Brick with the Shapes.

Tiles, Blocks, etc., in large variety of sizes constantly in stock.

SPECIAL SIZES AND SHAPES MADE TO ORDER.

PORTLAND FLUE OR CHIMNEY LININGS.

Protection Against Fires—Safety and Durability is the Best Economy.

A fire clay lining is an article designed to overcome the liability of fire from defective flues. They are manufactured out of specially prepared fire clay, under enormous steam pressure, and thoroughly burned in down draft kilns; subjecting them to such an intense heat that ordinary clays would melt and lose their shape; being thus prepared they are frost, fire and time proof.

They are all made in lengths of two feet and of different dimensions to suit the different kinds of work demanded of them. They are three-fourths of an inch thick, are perfectly smooth inside, and built in flues have but one cross joint every two feet and no perpendicular joints; the ends of the linings are carefully prepared so that when built in chimneys they fit close together and require little if any mortar to make a permanently tight joint.

The linings should be incased in four inches of well laid brick work, and should be built in as the chimney is being erected. One or more set of linings may be used in a chimney. It is always more satisfactory to have a seperate flue for each fire. In order to make absolutely fire proof flues, we would advise leaving one-half to one inch space between the outside of the flue linings and the inside of the brick work to be filled with soft mortar or grout. This space will also prevent rooms from being overheated by a very hot flue.

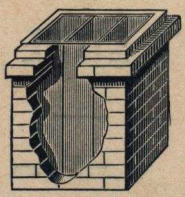
As usually constructed, flues or chimneys have eight inches of brick work; by using our fire clay flue linings four inches of brick work is all that is necessary, thereby saving four inches of brick work, and gaining eight inches space, overcoming all possibility of fire from defective flues.

Fire clay flue linings are not an experiment; they have been on the market for years, and their use is constantly increasing, and should be used by all who are in search of safety.

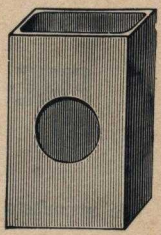
They make the most perfect flue that can be constructed, being perfectly smooth inside; the soot will not collect as in ordinary chimneys, the draft is better, and they are spark tight.

In unlined brick chimneys the action of heat and cold will cause the mortar to crumble and fall out from between the brick, leaving crevices through which the fire is liable to work its way; this is specially noticeable in old buildings. In chimneys or flues lined with our fire clay flue linings there is no mortar in the brick work from the action of the weather, and there can be no opening formed for the fire to escape. According to insurance statistics, defective flues cause one-half the fires; as a natural consequence the insurance rates are less on buildings which have their chimneys properly lined with fire clay linings.

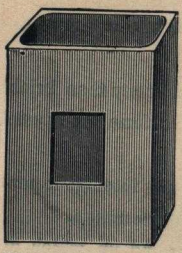
SQUARE.
8 1-2 X 8 1-2.



AS ENCLOSED IN BRICK-WORK.
2 FOOT LENGTHS.

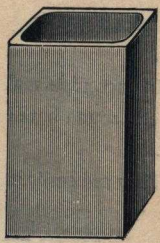


PIPE HOLE.



REGISTER OPENING.

ANGLE.



STRAIGHT.

Pipe hole, register openings, and angle pieces of any practicable kind on hand and made to order. But when required immediately and not at hand, they can with care be cut from the burnt ware.

PRICE LIST.

Square Flue or Chimney Linings.

IN TWO FEET LENGTHS.

Outside Measure.	PRICE.
4½ x 8½ in.	$0 30 per ft.
4½ x 13 "	45 "
4½ x 18 "	1 00 "
8½ x 8½ "	45 "
8½ x 13 "	65 "
8½ x 18 "	90 "
13 x 13 "	85 "
13 x 18 "	1 20 "
18 x 18 "	2 00 "

Openings, 50 per cent., added.

Round Flues Without Sockets.

Inside Measure.	PRICE.
6 inches.	$ 30 per ft.
8 "	45 "
9 "	55 "
10 "	65 "
12 "	85 "
15 "	1 25 "
18 "	1 70 "
20 "	2 25 "
24 "	3 25 "
30 "	5 50 "

Openings, four times price of one foot of pipe.

We invite the attention of **Architects** and **Builders** to the

PORTLAND SALT GLAZED FLUE AND CHIMNEY LINING

which we are now prepared to furnish.

Its great merit over the **Unglazed,** more especially where it is to be used for **Ventilating Purposes,** lies in the fact that it is not **porous** (unglazed being porous) and therefore cannot absorb and retain the **impure gases** and **germs** of **disease.**

Our facilities for manufacturing are such that we can furnish either glazed or unglazed at the same price, and at the lowest market prices.

FIRE-CLAY STOVE PIPE.

We manufacture Fire-clay Pipe from six to twenty-four inches diameter, expressly for chimneys. The six and eight inch pipes are the sizes generally used for this purpose, and the last-named size is quite large enough for two ordinary house fires.

In fact, pipe makes a more perfect chimney than bricks, a smooth, round bore being the best possible form for a smoke-flue.

They are easily and quickly put up by any intelligent person, dispensing entirely with the services of a brick mason.

The pipes are generally set with socket end up, which gives the best opportunity to make the joints tight with mortar or cement, but outside the building, it would be better to place them socket end down, to prevent water from entering the joints.

Where no fire-places are used, it is not necessary, of course, to have the pipes extend to the floor; but the chimney may be started at any point in the first or second story, by making a firm bearing for the bottom pipe at the desired point, on a strong shelf or bracket securely fastened to the wall.

Where the chimney comes through the roof, a piece of tin or sheet iron should be fitted closely around the pipe and plastered up tight with good mortar or cement, to prevent leakage.

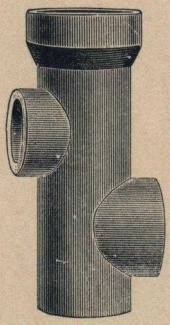
We manufacture Wind-Guards and T Guards to fit these pipe chimneys, as illustrated by cuts on succeeding pages. These guards give a pretty finish to the chimney, and prevent rain or snow from falling in at the top.

Thousands of these chimneys are in use, and they are giving as general satisfaction as any chimney in use. They are more desirable than sheet iron.

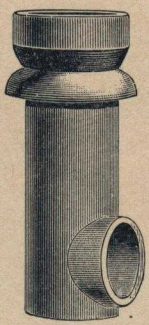
First. Because they do not rust or decay.

Second. They are durable and can be taken down and used again, if desired.

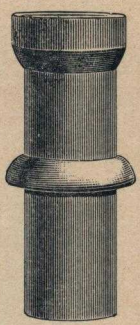
FIRE CLAY STOVE PIPE.



DOUBLE OPENING.
2 FT. LONG.

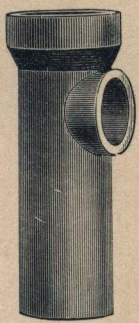


DROP BOTTOM.
3 FT. LONG.



BOTTOM.
2 FT. LONG.

PLAIN PIECE.
2 FT. LONG.



SINGLE OPENING.
2 FT. LONG.

Price List of Fire Clay Stove Pipe Socket Joints.

Caliber Round Flues inside.	Main Pipe, per foot.	Bottoms, 2 feet long.	Openings, Single, 2 feet long.	Openings, Double, 2 feet long.	Openings, Single, closed ends, 2 ft. long.	Drop Bottoms, 3 feet long.
6 inch.	$ .40	$1.20	$1.20	$1.60	$1.60	$2.40
8 "	.60	1.80	1.80	2.40	2.40	3.60
9 "	.70	2.15	2.15	2.80	2.80	4.20
10 "	.85	2.55	2.55	3.40	3.40	5.10
12 "	1.10	3.30	3.30	4.40	4.40	6.60
15 "	1.50	4.50	4.50	6.00	6.00	9.00
18 "	1.80	5.40	5.40	7.20	7.20	10.80
20 "	2.50	7.50	7.50	10.00	10.00	15.00
24 "	3.50	10.50	10.50	14.00	14.00	21.00

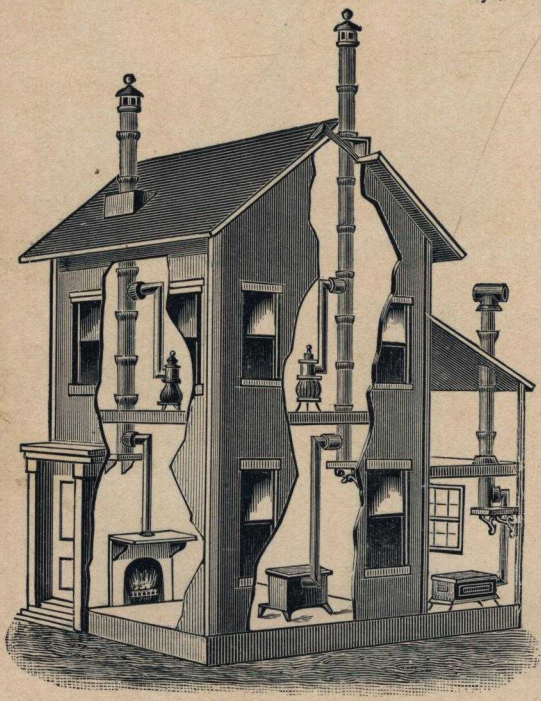
Additional lengths, charged in proportion. Bottoms closed, Openings or Flanges added, each to be charged one foot of pipe of the same size. Elbows or bends same price as double openings.

LIBERAL DISCOUNT TO THE TRADE.

CHIMNEYS WITHOUT BRICK.

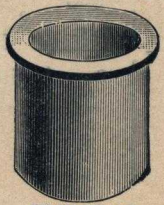
SAFE AND CHEAP.

This cut illustrates the way in which the Fire-Clay Stove Pipe is used in place of the brick chimneys. These pipes having sockets on are set one upon the other, and by cementing them at the joints, they are made perfectly safe from fire, which often occurs from defective flues in brick chimneys.



Showing the Manner of Putting up Chimney Pipe.

FIRE CLAY STOVE THIMBLES.

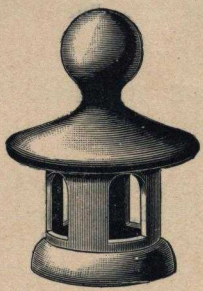


THIMBLE.

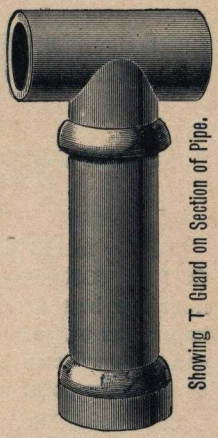
Inches. Diam.	Inches. Length.	PRICE.	Inches. Diam.	Inches. Length.	PRICE.
6	4½	$0 25	8	4½	$0 35
6	6	35	8	6	45
6	9	45	8	9	60
6	12	50	8	12	70

PORTLAND GLAZED CHIMNEY TOPS.

Showing Wind Guard on Section of Pipe.



Wind Guard Top.



Showing T Guard on Section of Pipe.

The above Guards are made to fit on Glazed Pipe from 4 in. to 18 in. and make a cheap and durable chimney. The pipe can be ordered in 3 foot lengths, if preferred.

PRICE LIST.

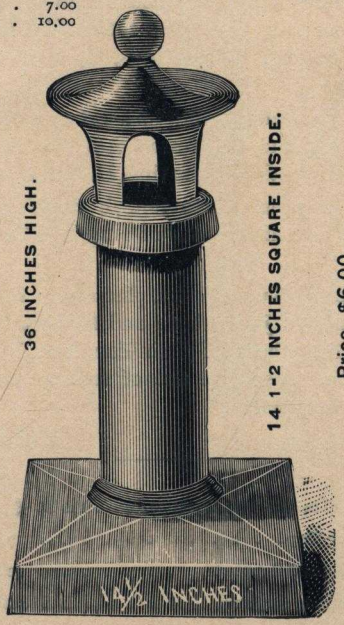
WIND GUARD TOP.

5	inches . .	$2.50
6	" . .	2.50
8	" . .	3.60
10	" . .	7.00
12	" . .	10.00

T GUARD TOP.

5	inches . .	$1.50
6	" . .	1.60
8	" . .	2.40

PORTLAND FLAG-HOUSE JACK.



36 INCHES HIGH.

14 1-2 INCHES SQUARE INSIDE.

Price, $6.00.

The above cut represents a Glazed Terra Cotta Chimney, 6 inches in diameter, suitable for small houses. It can be placed over the wood-work and easily made water-tight.

They have been used by Railroads for Flag-House Jacks.

PORTLAND STONE WARE CO.'S

IMPROVED

COMBINATION SMOKE-JACK.

—FOR—

LOCOMOTIVE ENGINE-HOUSES.

We beg to call your attention to our new TERRA-COTTA SMOKE-JACKS, for Engine Houses, made from the best fire-clay, glazed and vitrified, warranted impervious to, and indestructible by, any acids or gases, and are unaffected by the weather. Once in place they never need a dollar for repairs.

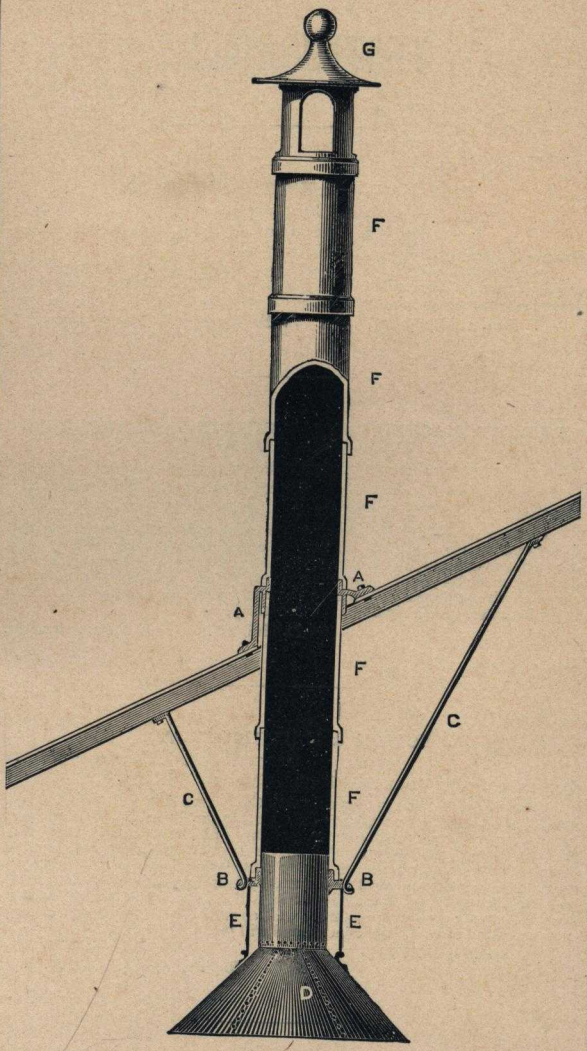
The roof-saddle, A, is a casting of rectangular form, having a flange surrounding the sides at a proper angle to suit any pitch of roof, and a covering top with its upward and downward projecting collars, upon and into which are placed our indestructible Terra-Cotta Pipe. This roof-saddle supports the Terra-Cotta Pipe placed above the roof, and steadies and makes connection to Terra-Cotta Pipe below roof; this pipe below the roof being supported by the ring-casting, B, and rods, C, from the roof as shown.

The sheet-iron bell, D, with its short section of smoke-pipe telescoping into the Terra-Cotta Pipe, is supported by, and held in postion to the ring, B, with small bolts, E.

We are now prepared to furnish these Smoke-Jacks complete, to any dimensions of length, either below or above roof.

When ordering Smoke-Jacks, please give the length in feet and inches of Jack, above and below the horizontal line intersecting the roof-pitch line, and line through centre of pipe. Also give rise of roof to proportionate length at horizontal line.

Pipe 3 ft. long, 18 in. dia. $\frac{3}{4}$ in. thick, 50 lbs. to the ft.	$1.50 per ft. net.
Wind Guard, or Top	7.50 net.
Castings for Roof and Supports, ...	20.00 "
Iron Work complete for Jack, ...	30.00 "



IMPROVED COMBINED SMOKE-JACK,

PERMANENT AND DURABLE AS A BRICK CHIMNEY.

DESCRIPTION. — A, ROOF CASTING, rectangular, with surrounding flanges, to suit pitches of roofs. B, B, CIRCULAR RING, suspended and held by rods, C, C, secured to roof, and supporting VITRIFIED PIPE below roof. D, BELL, with its short section of pipe telescoping into VITRIFIED PIPE, and held in position by short bolts, E, to ring B. F F F F F, Sections VITRIFIED PIPE, 3-feet lengths, which are supported, suspended and held in position by the castings A and B. G, WIND-GUARD, of same "VITRIFIED" material as pipes F F F F F.

TESTIMONIALS.

NEW HAVEN & NORTHAMPTON CO.

Office of Superintendent.

154 Water Street, NEW HAVEN, CONN., Nov. 6, 1884.

PORTLAND STONE WARE CO., Portland, Me.:

To your favor of 5th inst.: I have your Terra Cotta Smoke-jacks on engine-houses at Northampton, 5; Holyoke, 3; Westfield, 6. They have proved satisfactory in our three years' experience.

Respectfully yours, S. B. OPDYKE, JR., *Superintendent.*

DETROIT, MACKINAC, & MARQUETTE AND MARQUETTE & WESTERN RAILROADS.

General Superintendent's Office.

MARQUETTE, MICH., Nov. 21, 1884.

PORTLAND STONE WARE CO., Portland, Me.:

Gentlemen, — In reply to your favor of the 5th inst., I would say that in my opinion, the use of iron for Smoke-jacks in engine-houses will soon be discontinued entirely, and will be replaced by stoneware or terra-cotta pipe. The pipe made by your company is the best for the purpose that I am acquainted with at present. We have three engine-houses fitted with it and it is giving entire satisfaction. Yours truly,

D. MCCOOL, *General Superintendent.*

BOSTON & MAINE RAILROAD.

GREAT FALLS, N. H., Jan. 25, 1881.

PORTLAND STONE WARE CO., Portland, Me.:

Dear Sirs, — This is to certify that the Boston & Maine Railroad have used the Stone-ware Smoke-jacks on their engine-houses — which are made expressly for the purpose by your Company — for the last three years, and I find them superior to anything that I have used, being entirely free from filling up with soot, and never has a single one been cracked or injured in any way. We have now in constant use twenty-four Smoke-jacks of this pattern, and can cheerfully say that a single trial will not fail to give perfect satisfaction. They are also ornamental, as well as useful, and very much cheaper than any kind of Iron Smoke-jacks, and will last a lifetime.

Respectfully yours, E. A. SMITH,

Sup't of Track, B. & M. R. R.

BOSTON & ALBANY RAILROAD CO.

BOSTON, Jan. 31, 1881.

PORTLAND STONE WARE CO., Boston, Mass.:

Gentlemen, — In reply to your note about your Vitrified Stone-ware Smoke-jacks, I would say that the Boston and Worcester Division, Boston & Albany Railroad, have used them for the last four years, and I find them to all appearances as good as when first put up. The first cost is very much cheaper than any kind of Iron Jacks, and I see no reason why they are not indestructible to the action of frost or gases of any kind.

Your Flag-house Jack, made from our drawing, is giving perfect satisfaction, and both Jacks are superior to any I have seen.

Respectfully yours, A. H. GLOVER,

Master Builder, B. & Wor. Div., B. & A. R. R.

MAINE CENTRAL RAILROAD.

PORTLAND, Jan. 31, 1881.

PORTLAND STONE WARE CO.:

Dear Sirs, — The Smoke-jack Pipes manufactured by your Company have been in constant use on the Maine Central Railroad from the time of their first introduction, some six or seven years ago. Since that time they have been put on all our new engine-houses built, and also on such of our old engine-houses as have been repaired, and have in every instance proved very satisfactory.

Yours truly,

PAYSON TUCKER, *Superintendent.*

INTERCOLONIAL RAILWAY.

Office of the Chief Superintendent.

MONCTON, N. B., Nov. 30, 1880.

PORTLAND STONE WARE CO., Boston, Mass.:

Dear Sirs, — I have your letter, dated Nov. 24th, asking how the Smoke-jacks supplied by the Portland Stone Ware Company answered the purpose for which they were designed.

These were simply a few ordered for trial, and they were put upon one of our round houses. So far they have given good satisfaction.

Yours truly,

D. POTTINGER.

TROY & GREENFIELD RAILROAD AND HOOSAC TUNNEL.

NORTH ADAMS, MASS., April 14, 1882.

PORTLAND STONE WARE CO.:

Dear Sirs, — Your note of the 12th inst., to Austin Bond, Treasurer of Troy & Greenfield Railroad and Hoosac Tunnel, is referred to me. I take pleasure in replying that we put up three of your Smoke-jacks on our engine-house at North Adams last year, and they have given such good satisfaction that we have recently removed the remaining iron ones, and replaced them with your Jacks. We have now fourteen in use, and we can cordially recommend them.

Yours, etc.,

N. W. EAYRS, *Engineer Maintenance of Way.*

WORCESTER & NASHUA AND NASHUA & ROCHESTER RAILROADS (PORTLAND & WORCESTER LINE).

Superintendent's Office.

WORCESTER, MASS., Oct. 26, 1880.

PORTLAND STONE WARE CO., Portland, Me.:

Dear Sirs, — Yours of the 25th inst. is duly in hand, saying you had shipped for us seven Smoke-jacks, as per our last order.

It is now some two years or more since we put up the first of your Smoke-jacks, and they are all, apparently, as good now as when first set up; and I see no reason why they may not last for many years, as smoke and the gases seem to have no effect whatever on them. They are decidedly the best material for the purpose we use them, of anything I know of. We have them on our engine-houses at Worcester and Nashua, and the last ordered are for our Rochester house.

Yours truly,

C. S. TURNER, *Superintendent.*

GRAND TRUNK RAILWAY OF CANADA.

Office of the Mechanical Superintendent.

MONTREAL, Nov. 15, 1880.

PORTLAND STONE WARE CO., Portland, Me.:

Dear Sirs, — In reply to your letter of the 28th ult.: The earthenware pipes for Smoke-jacks have given us satisfaction; we shall continue to use them.

Yours truly,

HERBERT WALLIS, *Mechanical Superintendent.*

FITCHBURG RAILROAD (HOOSAC TUNNEL ROUTE).

Engineer's Office.

FITCHBURG, MASS., July 23, 1887.

GEO. C. DUNNE, ESQ., AGT. PORTLAND STONE WARE CO., 8 Liberty St., Boston:

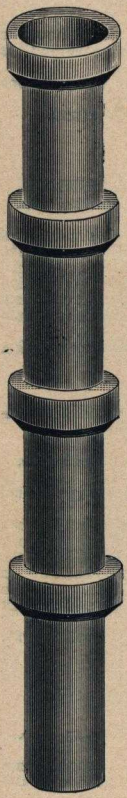
Dear Sir, — In reply to yours of 21st inst., will say that Smoke-jacks made by your Company have been in use on the Fitchburg Railroad for 5 years, with good results. We are now using them for all new engine-houses.

Yours truly,

E. K. TURNER, *Chief Engineer.*

WELL TUBING.

Within the past few years Vitrified Stone-ware Pipes have come into very general use for tubing bored wells, and they are certainly the cleanest and most durable materials ever used for that purpose. Where there is no stone to obstruct the boring, wells can be easily and cheaply made, with augurs similar to post augurs, constructed for the purpose, and such wells, when lined with this stone-ware tubing, are superior to any others in point of cleanliness and durability.



SOCKET.

RING.

For this use the sections are sometimes made without sockets, so as to fit the hole more closely; but the regular socket joint is by far the best, as this makes a more solid joint, each piece fitting accurately into the end of the next, thus forming a continuous tube, leaving no crevice for the dirt to fall in, doing away with the necessity of cleaning the well. Vermin cannot crawl through the joints and fall in; hence, sweet, pure water is the result.

Dug wells are curbed with the larger sizes, and are far superior to a curbing of brick or stone, for the reasons given above, and especially in sandy ground, where common wells are not easily made, and when made are constantly filling up with quicksand; but with these pipes a well can be put down with ease, even in a bank of quicksand. This is best done by a man getting inside the pipe and as he throws out the sand, the pipes settle down by their own weight. When the first pipe gets below the surface put on another, and so continue to do until the required depth is reached.

PORTLAND TERRA COTTA VASES.

The following cuts will give a faint idea of some of our Terra Cotta Garden Vases, which now stand in the front rank for beauty and workmanship. Terra Cotta has been employed in the manufacture of articles for use and ornament for over two thousand years. Terra Cotta Vases are indestructible, and are suitable for any climate; being slightly porous, they hold moisture for the wants of plants. Iron draws the heat of the sun, consequently keeping the vase hot, and drying the earth; besides, they require painting every year. These vases are nearly all made of one piece, while others are in two, requiring an iron rod in the centre. Our vases are different from any others in the city. We warrant every vase. All vases are numbered, by which means they can be ordered with or without pedestals.

Any person of taste and refinement delights in making his home attractive, and whatever serves to heighten the enjoyment of home, must be worthy of encouragement. No decoration adds so much to the natural beauty of a garden, and at so little expense, as a vase filled with flowering plants.

WINSLOW VASE.

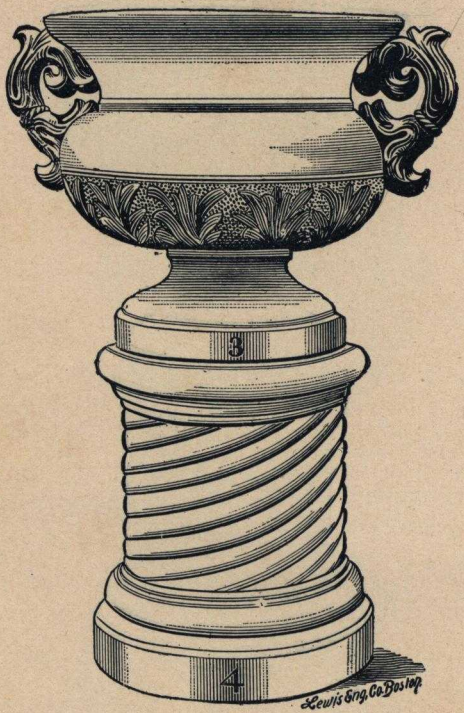
TERRA COTTA.
10 ft. high, $200.

No. 1 Vase, 26 inches high.

No. 2 Pedestal, 22 inches high.

Diameter across top of Vase, 25 in. outside.

Diameter across top of Vase, 22 in. inside.

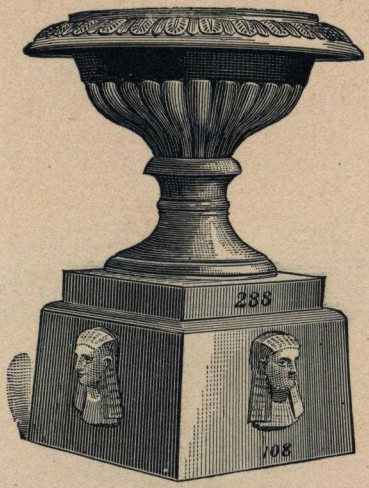


No. 3 Vase, 28 inches high.

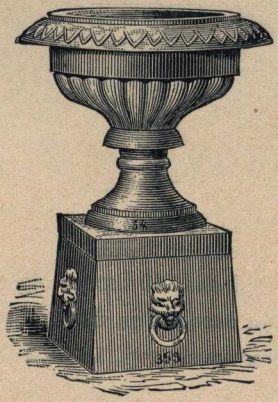
No. 4 Pedestal, 23 inches high.

Diameter across top of Vase, 26 in. Outside.

Diameter across top of Vase, 23 in. Inside.



No. 288 Vase, 17 inches high.
No. 108 Pedestal, 8 inches high.
Diameter across top, 20 inches Outside.
Diameter across top, 12 inches Inside.



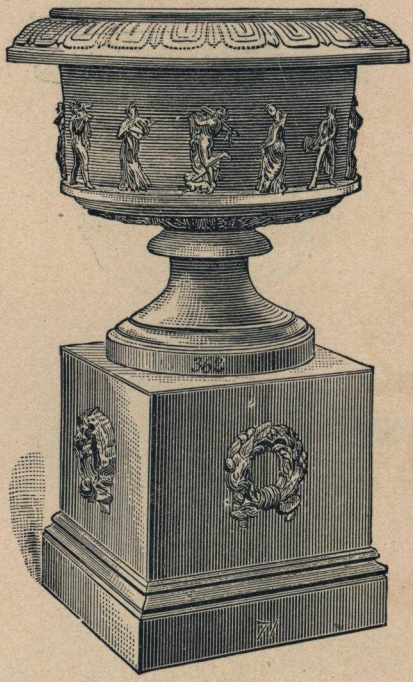
No. 54 Vase, 13 inches high.
No. 353 Pedestal, 8 inches high.
No. 56 Vase, same shape.
No. 58 Vase, same shape.

No.	54,	Diameter across top,		16 in.	Outside.
"	54,	"	"	10 "	Inside.
"	56,	"	"	14 "	Outside.
"	56,	"	"	8 "	Inside.
"	58,	"	"	12 "	Outside.
"	58,	"	"	7 "	Inside.

No. 362 Vase, 22 inches high.
Ornamented with Flowers.

No. 354 Pedestal, 13 inches high.
Diameter across top, 27 in. Outside.
Diameter across top, 18 in. Inside.

Vase 362 suitable for Pedestals Nos. 88, 110 and 354.



No. 362 Vase, 22 inches high.

Ornamented with Figures.

No. 71 Pedestal, 18 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

Vase 362 suitable for Pedestals Nos. 88, 110 and 354.

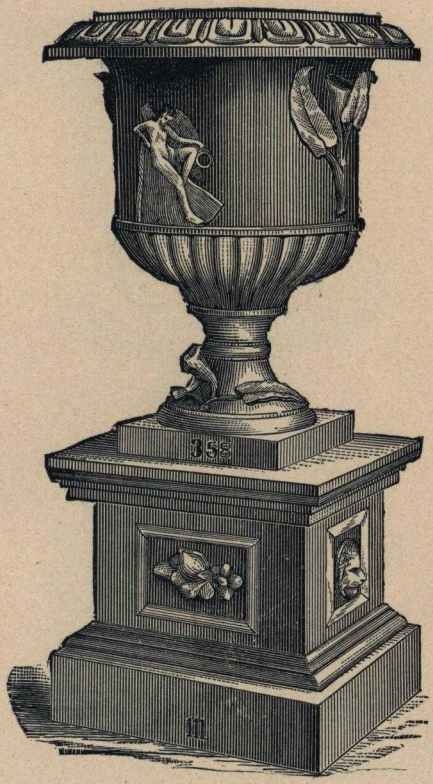
No. 361 Vase, 30 inches high.

No. 71½ Pedestal, 18 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

Vase 361 suitable for Pedestals Nos. 71, 110 and 354.



No. 358 Vase, 30 inches high.

No. 110 Pedestal, 18 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

Vase 358 suitable for Pedestals Nos. 71, 110 and 354.

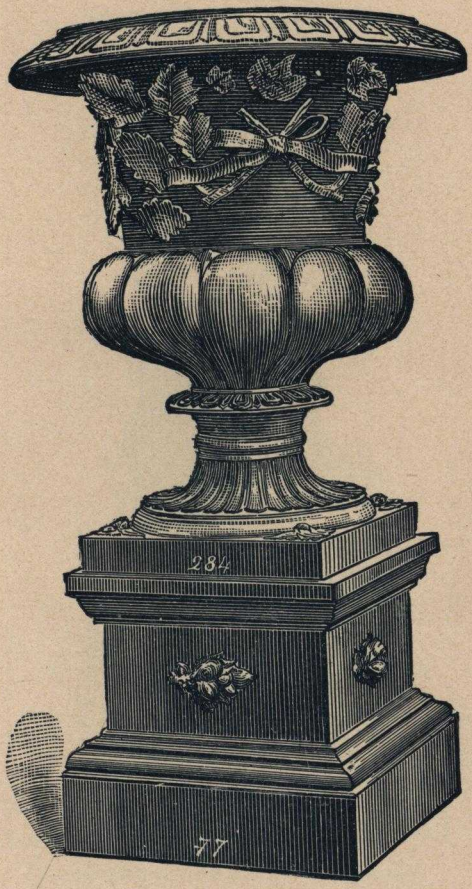
No. 70 Vase, 33 inches high.

No. 71 Pedestal, 18 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

Vase 70 suitable for Pedestals Nos. 88, 110 and 354.



No. 284 Vase, 40 inches high.
No. 77 Pedestal, 24 inches high.
Diameter across top, 38 in. Outside.

No. 363 Vase, 18 inches high.

No. 66 Pedestal, 22 inches high.

Diameter across top, 22 in. Outside.

Diameter across top, 14 in. Inside.

Vase 363 suitable for Pedestals Nos. 108 and 354.

No. 48 Vase, 30 inches high.

No. 110 Pedestal 18 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

Vase 48 suitable for Pedestals Nos. 71 and 354.

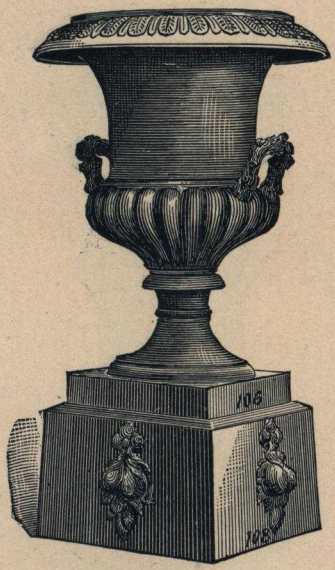
No. 49 Vase, 22 inches high.

No. 88 Pedestal, 21 inches high.

Diameter across top, 27 in. Outside.

Diameter across top, 18 in. Inside.

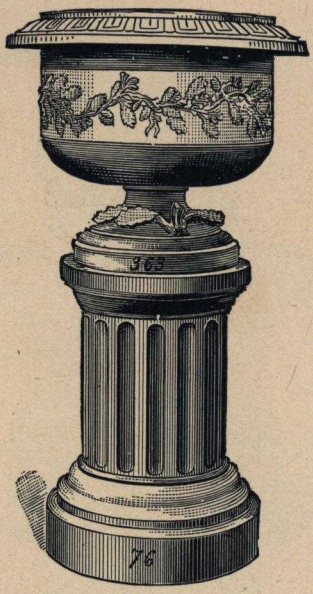
Vase 49 suitable for Pedestals Nos. 71, 110 and 354.



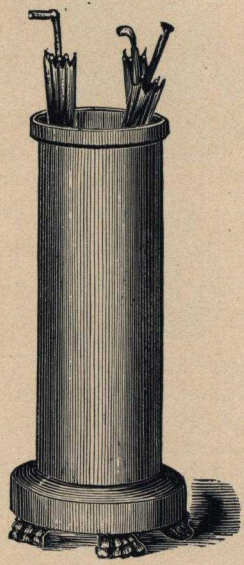
No. 106 Vase, 25 inches high.
No. 108 Pedestal, 8 inches high.
Diameter across top, 20 in. Outside.
Diameter across top, 12 in. inside.

No. 55 Vase, 18 inches high.
No. 87 Pedestal, 9 inches high.
No. 57 Vase, same shape.
No. 59 Vase, same shape.
Diameter across top, 16 in. Outside.
Diameter across top, 10 in. Inside.
No. 57, 14 in. Outside, 8 in. Inside.
No. 59, 12 in. Outside, 7 in. Inside.

These Vases are suitable for Pedestal No. 353.



No. 363 Vase, 18 inches high.
No. 76 Pedestal, 23 inches high.
Diameter across top, 22 in. Outside.
Diameter across top, 14 in. Inside.
Vase 363 suitable for Pedestals Nos. 76 and 354.



UMBRELLA STANDS.

TERRA COTTA VASES.

PRICE LIST.

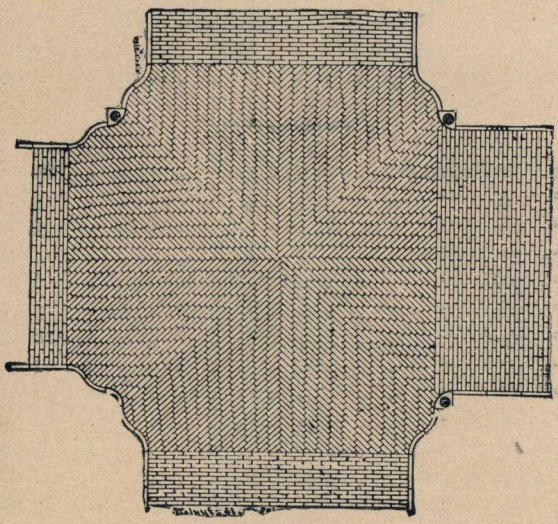
Winslow Vase		$200 00
No. 1	"	10 00
" 3	"	10 00
" 48	"	10 00
" 49	"	6 00
" 54	"	2 00
" 55	"	3 50
" 56	"	1 75
" 57	"	2 50
" 58	"	1 50
" 59	"	2 00
" 70	"	10 00
" 106	"	5 00
" 284	"	25 00
" 288	"	3 50
" 358	"	10 00
" 361	"	10 00
" 362	" (Flowers)	7 00
" 362	" (Figures)	7 00
" 363	"	4 00

No. 2	Pedestal	$5 00
" 4	"	5 00
" 66	"	3 00
" 71	"	4 00
" 71½	"	6 00
" 76	"	3 00
" 77	"	10 00
" 87	"	1 25
" 88	"	4 00
" 108	"	2 50
" 110	"	5 00
" 353	"	1 00
" 354	"	3 00

PAVING BRICK.

The use of paving brick pavements in New England continues to increase every year so that now a large number of our cities are using vitrified paving brick for street crossings and regular street paving. The Portland Vitrified Paving Bricks or Blocks are end cut bevelled and repressed. They are larger than a side or wire-cut brick. Many thousand yards of the Portland Pavers have been laid in New England cities during 1897 and 1898, and are standing our cold climate as well as any material used for street pavements.

INTERSECTIONS OF STREETS.

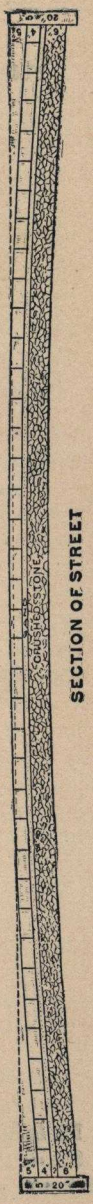


COST OF CLEANING BRICK PAVEMENTS.

The organ of the New York Reform Club Committee, *Municipal Affairs*, published quarterly, has, in its last issue, a very interesting and complete report upon the reforms effected in cleaning the streets of the city. By this it is shown that the ease with which certain types of pavement can be kept clean, as indicated by careful observation of the cost of doing the work, is as follows: Asphalt, 100; brick, 100; wood, (smooth karri), 100; granite, 150; Belgian blocks, 160; cobble stones, 400.

All the pavements were in good condition, and the accuracy of the table was checked by comparison with the number of sweepers actually employed in each sub-division in the city. For the entire city 1,623 sweepers were employed, each sweeper keeping clean an average of 5,746 square yards, at an average cost of $2.40 per 1,000 square yards a week; indicating, according to the estimate, that asphalt, brick and smooth karri wood paving could be kept clean at sixty-nine cents per 1,000 yards per week.

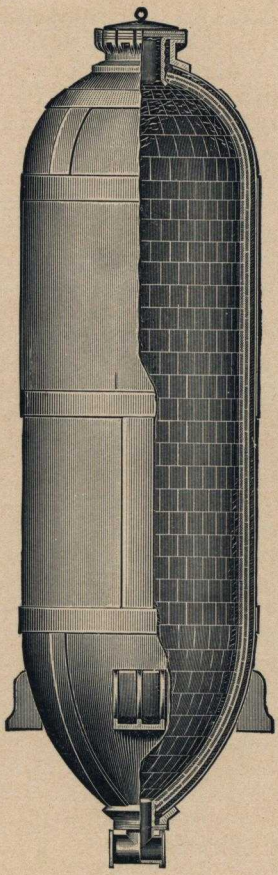
A brick pavement, when properly laid, is not a noisy pavement. It is a good and smooth road for traction purposes or for bicycling; while it affords a better foothold for horses than asphalt does, it is more than ten times as durable; it is lower in first cost, incomparably lower in cost of maintenance, and the New York report proves incontestably that, in the important matter of cleaning, the brick pavement is in no way inferior to asphalt; therefore, we cannot understand why the vitrified brick pavement is not universally adopted in all our cities.—*Scientific American.*



PORTLAND DIGESTER LININGS.

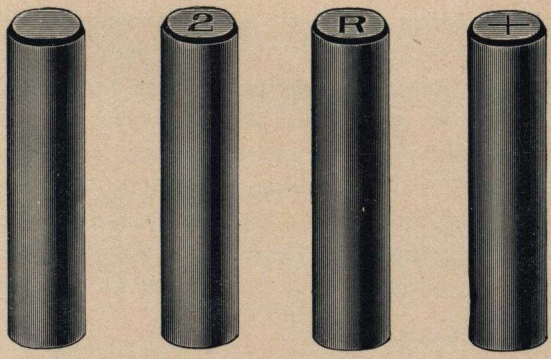
In use and giving excellent satisfaction at :—

INTERNATIONAL PAPER CO.,
THE EASTERN MANUFACTURING CO.,
SOUTH BREWER, MAINE.
ST. JOHN SULPHITE CO.,
ST. JOHN, N. B.
C. J. & D. PAPER CO.,
RUSSIA.



Made of clay especially adapted to this kind of work.
Send us blue-print or drawing of your digesters and let us figure on a set of linings for you.

VITRIFIED GRAVE AND LOT MARKERS.



These markers are manufactured from a superior quality of clay and burned until they are thoroughly vitrified, making the most durable material known.

The standard size is cylindrical in form, three inches in diameter, one foot in length and weigh eight pounds each.

The numbering and lettering are done while they are yet in a plastic state with stamps which are pressed in the top, making an indented figure which can never wear off.

The markers are placed in the ground, the top on a level with the surface. Lawn mowers can be run over them without injury or inconvenience and all sickling and pulling grass around unsightly wooden stakes is avoided.

Modern ideas demand that cemeteries should be kept on the park or lawn plan. The grass must be closely cut, and wooden stakes and other obstructions above the ground must be removed. These markers are especially adapted for carying out the best methods and ideas in this line of improvements. If you are platting new ground give the markers a trial and you will use nothing else. If you have an old cemetery, with many of the boundary marks lost, go over it and put in something that is permanent.

For single grave numbers, lot boundaries, perpetual care, section markers, lot numbers, numbered, lettered, or marked to order as wanted to correspond with plat, prices and full particulars furnished on application.

IMPORTANT TO YOU.

In the Spring of 1888, the Supt. of Sewers of Boston ordered of us three pieces of 12 in., and two pieces of 24 in. Sewer Pipe, to be delivered at the Sewer Yard, Albany Street, and same was paid for by the city.

Over a year after, we learned that these pieces of pipe, with a like number of Akron, were sent to the Massachusetts Institute of Technology, Boston, and subjected to crushing tests by Prof. Dwight Porter, with the following results copied from Blue Prints which can be seen at our office: —

TESTS OF SEWER PIPE BY PROF. DWIGHT PORTER,
APRIL, 1888.

One Piece.			Breaking Load.
12 in.	marked PORTLAND	No. 8,	5350 lbs.
12 "	" "	" 9,	5450 "
12 "	" "	" 10,	5050 "
12 "	" AKRON	" 5,	3000 "
12 "	" "	" 6,	3475 "
12 "	" "	" 7,	3150 "
24 "	" PORTLAND	" 1,	4100 "
24 "	" "	" 4,	3500 "
24 "	" AKRON	" 2,	2500 "
24 "	" "	" 3,	2200 "

The above tests, which we knew nothing about at the time, show conclusively the superiority of the Portland Salt Glazed Standard Sewer and Drain Pipe.

DOUBLE STRENGTH CULVERT DRAIN AND SEWER PIPE.

FROM TEST MADE AT THE WATERTOWN ARSENAL,
MAY 1896.

Portland Pipe tested between hardwood cushions fitted to diameter of Pipe, and covering approximately one-third the exterior diameter.

12-inch Pipe,	9,090 lbs.	20-inch Pipe,	7,880 lbs.
15 " "	7,980 "	24 " "	7,310 "
18 " "	10,010 "	30 " "	8,890 "

FROM A MASS OF TESTIMONY WE BEG TO CALL YOUR ATTENTION TO THE FOLLOWING.

CITY OF CAMBRIDGE, OFFICE OF THE CITY ENGINEER,
CITY HALL,
CAMBRIDGE, March 21, 1888.

GEO. C. DUNNE, Esq.

Dear Sir: In reply to your desire for my opinion as to the sewer pipe manufactured by the Portland Stone Ware Co., I would say that I have used it in this city for a number of years and it has given good satisfaction. It has of late been very much improved in strength and quality. I consider it a first-class drain pipe. Very truly, etc.

WM. S. BARBOUR,
City Engineer.

OFFICE OF CITY ENGINEER, CITY HALL,
LOWELL, MASS., Dec. 30, 1887.

GEO. C. DUNNE, Esq., Agent Portland Stone Ware Co.
Boston, Mass.

Dear Sir: In answer to your letter of the 26th inst., I would say that the city of Lowell has used the Portland Company's sewer pipe for the past two years, using sizes from six inches to twenty-four inches in diameter, and it has given perfect satisfaction. Very truly yours,

GEO. BOWERS,
City Engineer.

PAWTUCKET SEWER DEPARTMENT, OFFICE MUSIC HALL BUILDING,

PAWTUCKET, R. I., Dec. 19, 1887.

PORTLAND STONE WARE CO., GEO. C. DUNNE, Agent,

Boston, Mass.

Dear Sir: I have used, this last season, a number of carloads of pipe made by your Company and am very much pleased with it. It stands our inspection better than any of the Akron pipes, and is much stronger. It is not nearly as liable to breakage in handling as the Akron. Yours,

A. R. SWEET,
City Engineer.

METROPOLITAN CONSTRUCTION CO., GENERAL ENGINEERS AND CONTRACTORS,

OFFICE 12 PEARL STREET.

BOSTON, March 23, 1888.

TO WHOM IT MAY CONCERN:

This is to certify that during my fifteen years' connection with the Sewer Department of Boston, I used about all of the different kinds of sewer pipe manufactured. The Portland Stone Ware Co., during the past two years, have been making a red-body pipe and I consider it the finest pipe in the market to-day and should be very much opposed to using any other.

Very respectfully,

THOS. J. YOUNG.

CITY ENGINEER'S OFFICE, CITY HALL,

CHELSEA, May 31, 1883.

GEO. C. DUNNE, Agent Portland Stone Ware Co.

Dear Sir: In answer to your letter I would say that in Chelsea it has been the custom to obtain proposals from the Portland Stone Ware Co., and from the Akron Co. We have considered the two kinds of pipe of equal quality, and use them to the exclusion of other manufacturers.

Yours truly,

WM. E. McCLINTOCK,
City Engineer.

FITCHBURG, MASS., March 12, 1885.

GEORGE C. DUNNE, Esq.

Dear Sir: Yours of the 11th at hand. In reply, would say I have used the Portland Company's sewer pipe exclusively in our sewer construction for the last two years. For uniformity of size and quality of material I should give it the preference to the Akron pipe. Yours, etc.

THOS. C. LOVELL,
City Engineer.

OFFICE ATWOOD LEAD CO.
PORTLAND, ME., May 23, 1870.

PORTLAND STONE WARE CO., Portland, Me.

Having subjected your stone-ware glazed drain-pipe to various chemical tests at our lead-works, we find that they resist not only the most powerful acids and other chemical agencies, but were utterly unaffected by any of the severe tests to which we subjected them.

WM. ATWOOD,
Pres. A. L. Co.

L. FRED'K RICE, ARCHITECT AND CIVIL ENGINEER,
9 PEMBERTON SQ.

BOSTON, May 16, 1893.

MR. G. C. DUNNE, Boston.

Dear Sir: In my practice I have for many years used, and been cognizant of the use of, glazed earthen-ware pipe of various makers, both American and foreign. The quality of pipe furnished from these different sources has been so various and uncertain that I have now settled into the practice of avoiding the uncertainty by specifying "Portland or Akron pipe" for sewer purposes — feeling confident that either will be a good article, and that there is really no choice between them as to quality. My decision between them would in almost every case depend upon the thickness of the pipe proposed to be furnished, and the price demanded. Truly,

L. FRED'K RICE.

CITY OF PORTLAND, CITY ENGINEER'S OFFICE,

March 25, 1884.

I hereby certify that for the past ten years the City of Portland has laid large quantities of vitrified sewer pipe of the Portland Stone Ware Company's manufacture, to the entire satisfaction of the several committees on sewers and of the superintendents of sewers. Within the last six years, considerable improvement has been made in the quality of the pipe, and it now compares favorably, in respect of combined excellence and low cost, with any pipe which has come under my notice.

WM. A. GOODWIN,

City Eng'r and Sup't of Sewers.

CITY OF PORTLAND, CITY ENGINEER'S OFFICE,

December 31, 1887.

MESSRS. WINSLOW & CO., PORTLAND STONE WARE CO.

Gentlemen: In accordance with your request, I am glad of the opportunity to give you my opinion of the vitrified pipe of your manufacture. To the excellence of your smaller pipe up to 18-inch diameter I have already frequently testified. As soon as you began the manufacture of 20 and 24 inch pipe this year, I recommended its use instead of brick, which had been estimated for, and shall continue to do so. We have laid 1,342 feet of the 24-inch this year, and 292 feet of 20-inch, some of it at a depth of 13½ feet, to my entire satisfaction.

I shall never again recommend a brick sewer of 20 or 24 inch so long as your pipe can be had at your present price.

Yours very respectfully,

WM. A. GOODWIN,

City Engineer.

The figures given below is the average pressure upon each square inch of the pipe.

OFFICE OF SUPERINTENDENT OF SEWERS,
CITY HALL, BOSTON, Sept. 1, 1869.

TEST OF PORTLAND DRAIN PIPE.

12 inch	78 lbs.	per	square inch.
10 "	120 "	"	"
8 "	103 "	"	"
6 "	130 "	"	"
4 "	255 "	"	"

(Signed) WM. H. BRADLEY,
Sup't of Sewers.

TEST OF 12-INCH SEWER PIPE IN BOSTON, 1878, BY WM. H. BRADLEY, ESQ., SUP'T OF SEWERS.

Owners and Kinds of Pipe.	Size.	Crushing weight lbs., foot.	Breaking Wt. lbs. 2½ ft. Span.
PORTLAND STONE WARE CO.	**12 in.**	**2652**	**4913**
OTIS & GORSLIN	12 "	2807	4299
HILL SEWER PIPE CO.	12 "	2286	4299
D. W. LEWIS, Agent	12 "	2107	4606
T. W. CARTER, Agent	12 "	2140	4299
GEO. W. RADER	12 "	2052	4299
D. L. KING, Sec. Akron Co.	12 "	1891	3992

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53 DEVONSHIRE ST., BOSTON, May 7, 1883.

E. B. WINSLOW, Sup't, Portland, Me.

Dear Sir: I have received your note requesting my experience with Portland Stone Ware Co.'s pipe, and my opinion of it generally.

The Portland Stone Ware Co.'s pipe has been perfected so much in recent years that I have received it on an equality with other brands of vitrified pipe, and on two occasions, when the price was lower, have awarded the city contract to you. I have been satisfied with the way in which you filled your contracts, and in the action of the pipe when in use. In the largest sizes I think Portland has the advantage of extra thickness and weight.

Yours truly,

WM. H. BRADLEY.

DRAINAGE CONSTRUCTION CO., 44 STATE ST., BOSTON.

Chief Eng. & Gen. Man., JOHN BOGART, 35 Broadway, N. Y.
Consulting Eng's, GEO. E. WARING, Jr., Newport, R. I.
EARNEST PONTZEN, 4 Rue de Castellane, Paris.

DIRECTORS:

R. B. POTTER, Pres. — H. L. HIGGINSON, Treas. — GEO. E. WARING, Jr.

KEENE, N. H., June, 27, 1883.

GEORGE C. DUNNE, Esq.

Dear Sir: Both cars shipped June 22d and 23d here to-day. Thanks for your promptness. The carload inspected has turned out wonderfully well, as you will see by the inspection report which I ordered sent you. The second car will be inspected to-morrow.

The results fully uphold your circular in regard to the percentage of rejections of the different makes of pipes. We have used Akron, Rochester, Boynton, Scotch, and English pipe here, beside the Portland. The inspection has been very rigid, as you know, and the Portland pipe has passed it decidedly the best of any. We are ordering now wholly of you. I will see about the freights to-morrow and write you.

I have written Col. Waring to-day about the superiority of your pipe.

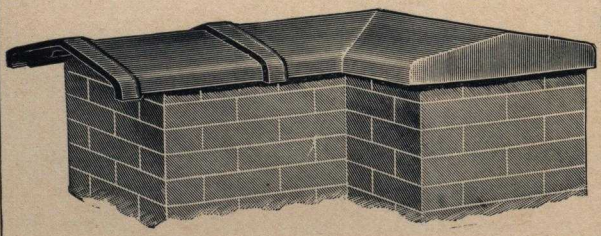
Truly yours,

J. W. SEWALL,
Engineer in charge D. C. Co.

TESTS OF SEWER PIPE IN PROVIDENCE, BY J. HERBERT SHEDD, Esq., CHIEF ENGINEER, IN 1875, WHICH WAS OPEN TO ALL AMERICAN MANUFACTURERS.

Kinds of Pipe.	Size.	Average crushing weight per foot.
PORTLAND	**12 in.**	**1766**
AKRON (Ohio)	12 "	1723
SALAMANDER	12 "	1464
WALDO BROS.	12 "	1456
PORTLAND	**15 "**	**1765**
SALAMANDER	15 "	1397
WALDO BROS.	15 "	1385
AKRON (Ohio)	15 "	1261
PORTLAND	**18 "**	**1942**
WALDO BROS.	18 "	1599
SALAMANDER	18 "	1464

PYRAMID WALL COPING.



Salt glazed and thoroughly vitrified. Surface as smooth as glass and will last forever. The Coping is designed to cover the wall completely and protects same from frost and weather. It also secures the top courses of brick.

WALL COPING LIST.

8 inch and 9 inch, - -	$0.35 per foot.
12 inch and 13 inch, - -	.55 per foot.
18 inch, - - - -	1.00 per foot.

Corners, Angles and Closed Ends or Starters, each three times the price of one foot of straight Coping.

K. & M.

SECTIONAL CONDUIT

(PATENTED.)

For the Insulation and Protection of Steam or Water Pipes.

ADVANTAGES:

Costs less than any other approved Conduit.
Provides perfect insulation and protection.
It is water and air tight.
It is readily applied to any system, new or old.
Provides perfect support for pipes.

Special Illustrated Circular Sent on Application.

PRICE LIST.

Size.	Conduit per foot.	3 ft. Tee with 15 in or larger tap each.	3 ft. Tee with 12 in or smaller tap each.	2 ft. Tee each.	3 ft. Unions each.	2 ft. Unions each.
24 in.	$3.90	$34.14	$25 36	.....	$25.36	.....
22 "	3.30	28.89	21.46	.....	21.46	.....
20 "	2.70	23.64	17.56	.....	17.56	.....
18 "	2.04	17.86	13.26	.....	13.26	.....
15 "	1.62	14.22	10.56	.....	10.56	.....
12 "	1.20	.....	7.80	.....	7.80	.....
10 "	.90	.....	.....	$4.08	5.88	$4.08
8 "	.60	.....	.....	2.70	.....	2.70
6 "	.36	.....	.....	1.62	.....	1.62

DISCOUNT ON APPLICATION.

VITRIFIED GLAZED CONDUIT

for Underground Telephone or Electric Light Wires.

PRICES ON APPLICATION.

TELEGRAPH CODE.

APPLE.	Please mail us price on carload of Pipe and say when you can ship.
APRICOT.	Please wire us price on carload of Pipe and say when you can ship.
BANANA.	Ship us by first freight from Portland.
CHERRY.	Ship us by first freight from Boston.
CITRON.	Ship us by first express from Boston.
DATES.	Please add to our order of —
FIGS.	Please hold our order for further instructions.
GRAPE.	Wire us if you cannot ship.
LEMON.	Answer by wire at once.
OLIVES.	Have you shipped our order of —
ORANGE.	If not too late add —
PEACH.	Ship at once and follow with tracer.
PEARS.	Send tracer after Pipe shipped to—
PLUM.	Standard Pipe in two feet lengths.
QUINCE.	Standard Pipe in three feet lengths.
TOMATOES.	Deep and Wide Socket Pipe in three feet lengths.
TREE.	Double Strength Pipe in two feet lengths.
VINE.	Double Strength Pipe in two and one-half or three feet lengths.
HEMLOCK.	Cannot wire definite answer. Will write particulars.
MAPLE.	Can we substitute?
OAK.	Your order will go to-day, followed with tracer.
BIRCH.	"B" Fire Brick.
ELM.	No. 1 Fire Brick.
PINE.	Rock Bottom Fire Brick.
SPRUCE.	Barrels of Fire Clay.